



CRITICAL AREAS REPORT

Cougar Ridge Estate - Bellevue, WA

Prepared for: Vadim Scherbinin, Apex Elite Homes



October 2016



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Prepared for:

Vadim Scherbinin
Apex Elite Homes
1 Lake Bellevue Drive, Suite 111
Bellevue, WA 98005

Prepared by:



750 Sixth Street South
Kirkland . WA 98033

p 425.822.5242
f 425.827.8136
watershedco.com

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The Watershed Company
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The Watershed Company Contact Person:
Kenny Booth, AICP

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CRITICAL AREAS REPORT

COUGAR RIDGE ESTATE – BELLEVUE, WA

1 INTRODUCTION

1.1 Background and Purpose

The purpose of this report is to document potential critical area buffer and setback impacts associated with the proposed residential development project located on a parcel in the City of Bellevue, Washington (Figure 1). The parcel is currently undeveloped. The parcel provides habitat for species of local importance, has geologic hazard areas, wetland areas, and a stream.

The applicant proposes to construct a single-family residence and appurtenances. The proposed footprint of the residence avoids wetland and stream areas and associated buffers. The majority of the development is proposed outside of the standard toe-of-slope setback. However, due to site conditions, some of the structure is proposed within the standard toe-of-slope setback. Minor clearing and grading will also occur within stream and wetland setback areas. Development will avoid all critical areas including wetlands, streams, and geologic hazard areas. Bellevue Land Use Code (LUC) 20.25H.230 requires compliance with specific critical areas report criteria as part of any modification to a critical area buffer or setback. This report fulfills these criteria. Further, pursuant to LUC 20.25H.250(C)(1), this report has been prepared in conjunction with a geotechnical analysis report by LeRoy Surveyors and Engineers, Incorporated (LS&E). The majority of technical geological hazard discussion can be found in their report. Conversely, this report presents a detailed discussion of the habitat and vegetation on-site and how the proposed development can be achieved with no net loss of on-site or off-site critical area functions and values compared to the standard regulations.

1.2 Description of Project Area

The subject parcel is located on SE Cougar Mountain Way between 166th Way SE and 167th Ave SE (parcel number 2524059192) in the City of Bellevue. The parcel does not currently have an address. The parcel is approximately 2.3 acres in size. It is undeveloped and is largely forested. The property slopes downhill to the west throughout the property, varying in grade. The property contains slopes over 40% and 10 feet in vertical height that are considered a steep slope critical area. The property also contains slopes that meet the criteria for a landslide hazard area. The steepest slopes are within the center of the parcel, more gradual slopes are present in the western and eastern extents of the parcel.

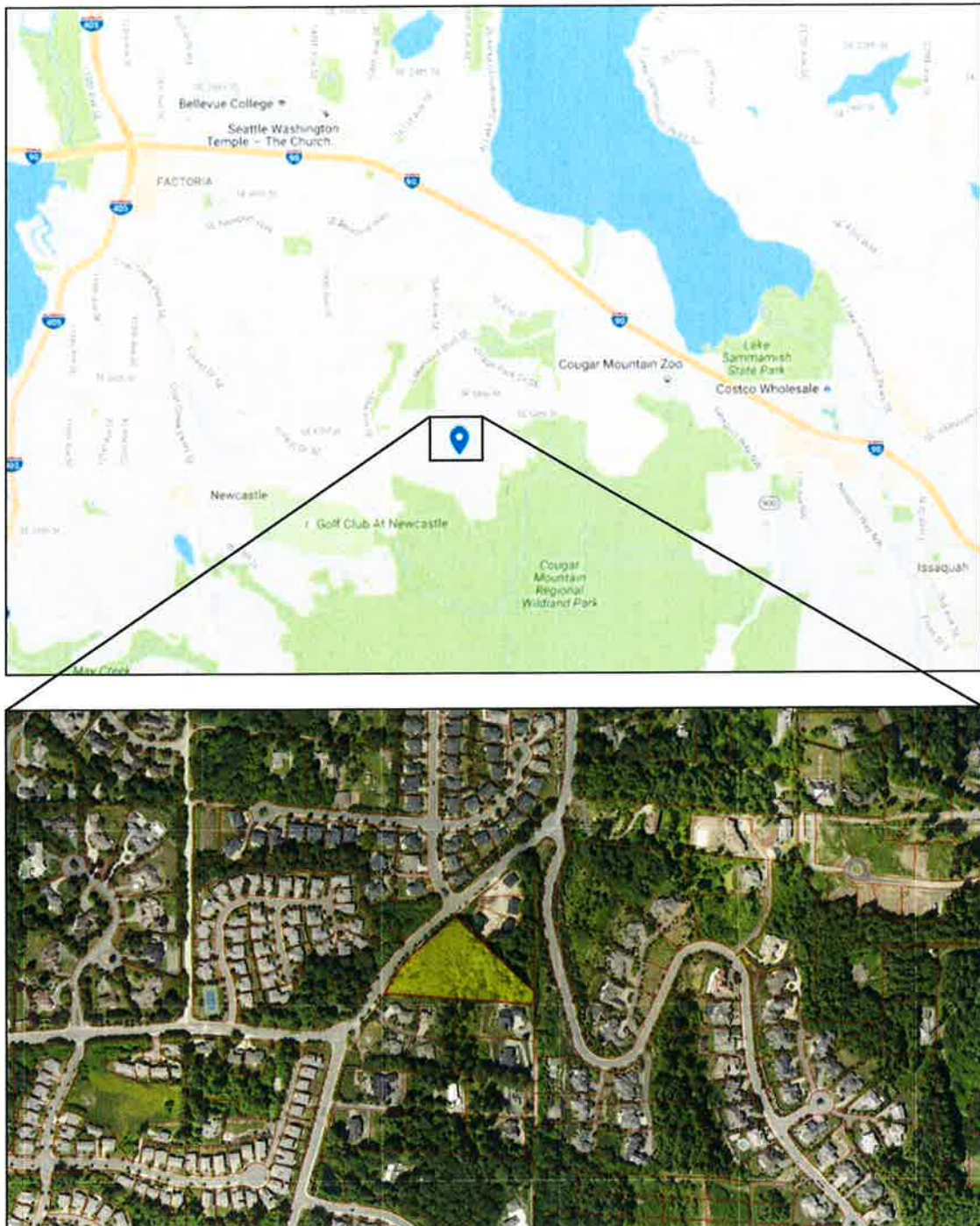


Figure 1: Vicinity and street level map.

H&S Consulting completed a wetland delineation and rating of the property in 2015. The Watershed Company visited the site to review the results of the wetland study and

update the boundaries and rating of the wetland. The Watershed Company also documented the presence of a stream on the parcel, flagged the Ordinary High Water Mark and classified the stream. According to the Critical Slope Mitigation Report prepared by LS&E (dated September 9, 2015), groundwater seepage was not observed on-site. However, according to the report, seepage or groundwater may be encountered at elevations where earth work activity is proposed. A wildlife biologist at The Watershed Company also visited the site to evaluate habitat on the property.

2 CRITICAL AREAS

2.1 Soils

According to the USDA Natural Resource Conservation Service (NRCS) Web Soil Survey maps, the soils across the site are mapped as 90% Alderwood gravelly sandy loam (AgC) and 10% Beausite gravelly sandy loam (BeD). LS&E “confirmed geologic mapping and clarified the contact between the NRCS soil groups”. See the Critical Slope Mitigation Report from LS&E for more details.

2.2 Wetlands and Streams

Wetlands and streams are described in the attached in the Critical Areas Delineation Report, Parcel 2524059192 by H&S Consulting and the Wetland and Stream Delineation Study, Parcel #2524059192 by The Watershed Company (Appendix B).

2.3 On-site Vegetation and Habitat

The habitat types present on the site, as defined in the Bellevue Urban Wildlife Habitat Literature Review, include mixed coniferous-deciduous forest, a stream, and a wetland. A diversity of plant species is present throughout these habitat areas on site (see Table 1).

The forest canopy on site is dominated by mature big leaf maple trees (see Habitat Sketch in Appendix C). Several conifers are scattered throughout the site, primarily western red cedars upslope in the southeast portions of the parcel. Average forest canopy is approximately 80-100 feet high and several deciduous and coniferous trees with a large DBH (>30) are present. The understory is dominated by vine maple, Indian plum, and snowberry. The ground cover is dominated by sword fern, Cascade Oregon grape, and Robert’s geranium.

Habitat features in the wetland and stream areas include water-holding features, a recent nest, small to large snags (DBH 10-30), and downed wood. Species sign observed in the wetland and along the stream include woodpecker signs on snags and logs (ex. Figures 6 and 9) and a recent birds nest (robin-sized, see Figure 8).

The north patch, dominated by big leaf maple, featured large downed wood. Elk feces were observed in this area, downslope of where the on-site stream loses a surface channel.

In the forested patch containing conifers, habitat features observed include steep slopes, boulders, large downed wood, large snags, and large stumps. A red-tailed hawk and a northern red-legged frog were observed in the steep slope area northeast and upslope of the stream. Songbirds observed in this area include chickadees, kinglets, and juncos. Woodpecker signs on snags were observed near high on the slope in the eastern portion of the parcel. Elk and racoon feces were present in this area.

Some invasive vegetation is present on site including English holly. The English holly is scattered throughout the parcel in a typical irregular dispersal pattern. Knotweed and creeping buttercup are present in the wetland area in the southwest corner of the parcel. Trace amounts of Himalayan blackberry are present near SE Cougar Mountain Way. Table 1 lists plant species that were documented on site.

Table 1. Vegetative species documented on site.

Common Name	Scientific Name	Stratum
Big-leaf maple	<i>Acer macrophyllum</i>	Tree
Red alder	<i>Alnus rubra</i>	
Western red cedar	<i>Thuja plicata</i>	
Western hemlock	<i>Tsuga heterophylla</i>	
English holly	<i>Ilex aquifolium</i>	
Evergreen blackberry	<i>Rubus laciniatus</i>	
Salmonberry	<i>Rubus spectabilis</i>	
Himalayan blackberry	<i>Rubus armeniacus</i>	
Indian plum	<i>Oemleria cerasiformis</i>	
Vine maple	<i>Acer circinatum</i>	
Snowberry	<i>Symphoricarpos albus</i>	
Salal	<i>Gaultheria shallon</i>	
Trailing blackberry	<i>Rubus ursinus</i>	
Salmonberry	<i>Rubus spectabilis</i>	
Red elderberry	<i>Sambucus racemosa</i>	
Black twinberry	<i>Lonicera involucrata</i>	
Black swamp gooseberry	<i>Ribes lacustre</i>	
Lady fern	<i>Athyrium cyclosorum</i>	Herbaceous
Creeping buttercup	<i>Ranunculus repens</i>	
Sword fern	<i>Polystichum munitum</i>	
Cascade Oregon grape	<i>Mahonia nervosa</i>	
Piggy-back plant	<i>Tolmiea menziesii</i>	

Cooley's hedge nettle	<i>Stachys cooleyae</i>	
Catchweed bedstraw	<i>Galium aparine</i>	
Robert's geranium	<i>Geranium robertianum</i>	
Giant horsetail	<i>Equisetum telmateia</i>	
Stinging nettle	<i>Urtica dioica</i>	
Willowherb	<i>Epilobium ciliatum</i>	
Reed canarygrass	<i>Phalaris arundinacea</i>	
Knotweed sp.	<i>Polygonum sp.</i>	
Carex sp.	<i>Carex sp.</i>	
Grass sp.	<i>Poa sp.</i>	

2.4 Functional Assessment Form

The site was rated using the Bellevue Urban Wildlife Habitat Functional Assessment Model (FAM) for Upland Habitat (see Appendix C) and the Bellevue Urban Wildlife Habitat Literature Review (Bellevue Habitat Review).

The property designation for the study area is Zone D and the site scores 53 points overall. Local parameters that scored high were based on diverse habitat patch types, vegetative composition, variable structure complexity across vegetated patches, the presence of large conifers and snags, and special habitat features (defined in the FAM). Qualities that detract from the site's ability to perform habitat functions are the developed surroundings, poor connectivity to other habitat patches, and moderate interspersions of habitat edges. However, despite poor connectivity, the proximity of other urban habitats and critical areas, separated from on-site habitat by roads and houses, allows for the possibility that wildlife may migrate to the site from the surrounding area. Overall, the site would show greater habitat function if the immediately surrounding area provided better connectivity to other habitat patches.

Overall habitat on the parcel likely provides a high level of habitat functions for wildlife, despite the proximity to other residential development. Habitat structure on the steep slope is moderately complex, with medium and large sized deciduous and coniferous trees and a layer of mixed native and invasive shrubs and groundcover. There are some structural habitat features including snags, large woody debris, and boulders which provide habitat for birds, reptiles and small mammals. The wetland and stream on site provide additional habitat complexity, allowing for use of the site by amphibians.

2.5 Landscape Considerations

Adjacent parcels to the study site are zoned as single family residential. The mixed deciduous-coniferous forest on site extends onto adjacent parcels containing single-family homes to the northeast and south, making the total size of the contiguous forested patch approximately four acres.

Cougar Mountain Regional Wildland Park is located approximately 1600 feet south of the subject property. WDFW designates the Cougar Mountain area as a biodiversity area and corridor; it is a large block of older second growth natural forest and part of the King County wildlife habitat network. Existing residential homes and SE Cougar Mountain Way separate the subject property from the biodiversity area. This residential area results in an isolated forested patch, to the north and west from the nearby Cougar Mountain wildland.

The on-site habitats are limited by poor connectivity to other habitat patches for some small animals. This reduces the likelihood of less mobile species, such as invertebrates and small mammals (Bellevue Habitat Review), from entering the study area through the surrounding landscape. Isolated habitat patches within a close proximity to larger refuge habitat areas have connectivity for animals able to traverse between these areas. Cougar Mountain wilderness is likely in close enough proximity to the study site to provide a source for highly mobile species with larger ranges such as birds and large mammals (ex. elk) (Bellevue Habitat Review) to enter the study site.

2.6 Species of Local Importance

The City of Bellevue designates habitat associated with species of local importance as a critical area [LUC 20.25H.150(B)]. The conditions on site may provide suitable habitat for several species of local importance [LUC 20.25H.150(A)]. Out of these designated species, the ones that are documented or likely to occur in Bellevue include: bald eagle, pileated woodpecker, Vaux's swift, merlin, purple martin, great blue heron, osprey, red-tailed hawk, and common loon (Bellevue Habitat Review).

PHS does not indicate the presence of any priority species on or within 0.5 mile of the property. Species closely associated with larger aquatic habitats (purple martin, great blue heron, osprey, and common loon) are not expected to use the habitat on the site. No other federal or state listed species are expected to have a close association with the habitat on site. The likelihood of each of the remaining species likely to occur in Bellevue to utilize the property is discussed below. Because the adjacent township contains known Townsend's Bat occurrences (PHS, masked data), the likelihood of this species using the site is also discussed.

Species that may infrequently occur in the vicinity

Species for which the conditions on site might provide adequate habitat to support use of the site, (but not considered to occur regularly or have a close association with the habitat on site) are: bald eagle, Vaux's swift, merlin, and Townsend's big-eared bat.

Bald Eagle

Bald eagles are common foragers over Lake Sammamish and Lake Washington, and active nests are known around those lake areas. Eagles may nest up to 4 km from large bodies of water containing fish and other food sources (NatureServe). Habitat features present on site that are bald eagle habitat (NatureServe) include forested wetland, mixed

conifer woodland, and standing snags. However, local populations appear to breed closer to large water bodies than the vicinity around the study site. Bald eagles may fly over the site, but are unlikely to nest there. The property is not within a Bald Eagle Management Zone, as indicated by Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) data. The nearest documented nesting site is over three miles away on Lake Sammamish.

Vaux's swift

Vaux's swifts forage in open skies over forests, lakes, and rivers, where insects are abundant. Lake Sammamish and Lake Washington provide suitable foraging habitat, and the species may be present at times over the parcel. Nesting takes place in forest stands; old-growth forests where large, hollow snags are available are preferred nesting habitat in Washington (NatureServe). While the property does contain snags, it does not contain the hollow old-growth snags that Vaux's swifts prefer, so it is unlikely that the birds would nest on site.

Merlin

Merlins occur throughout western Washington in winter and during migration. Breeding birds are rare in the state. Occurrences are spotty, but not uncommon in suburban areas. Merlins typically nest in old nest sites built by other birds, usually in coniferous forests. Although the conditions on site might provide adequate habitat to support merlin use of the site, a close association between this species and the habitat on site is not expected.

Townsend's big-eared bat

Although Bellevue contains habitat for Townsend's big eared bats, the species does not have mapped occurrences in Bellevue (Bellevue Habitat Review). PHS data (2012) show a communal roost located in an adjacent township, starting approximately 0.75 miles east of the property. The habitat on site would probably not be considered suitable for roosting; large snags and trees present on the site may be of a suitable size, but nearby disturbance likely precludes the use of these features. This species has been known to travel up to 13 kilometers while foraging. Depending on the location of the communal roost in the nearby township, it is possible that Townsend's big-eared bats pass through the site while foraging.

Species that may have an association with the habitat on site

Two species of local importance may have an association with the habitat on site. A red-tailed hawk was observed during the site visit and habitat associated with pileated woodpeckers was noted. Therefore, an association with the habitat cannot be precluded for these species. This discussion below includes management recommendations regarding these species.

Red-tailed hawk

One red-tailed hawk was heard upslope of the stream near the northeast border of the parcel. Red-tailed hawks nest in large trees near woodland edges, but can also nest in shrub tops (NatureServe). Although no raptor nests were observed during the site visit, nesting habitat could include the larger trees near the forested edges on the subject property. Perches are an important habitat feature for red-tailed hawks, and the large number of snags on site likely create refuge for hawks while foraging. Red-tailed hawks are ubiquitous in this area and likely occasionally fly over the parcel, and may use the larger snags, such as those in the wetland area, for perching.

Management Recommendations

Although Washington Department of Fish and Wildlife do not provide management recommendations for red-tailed hawks, the Fish and Wildlife Service (Draft Guidelines for Raptor Conservation in the Western United States (2008)) give general recommendations for raptor habitat management and the Bellevue Habitat Review provides general management recommendations and mitigation measures generally applicable to the species of local importance. Several of these recommendations which are applicable to red-tailed hawks and the study area are listed below.

Fish and Wildlife Service General Raptor Management Guidelines:

Habitat management manipulations should be planned to:

- Avoid or minimize impacts to habitats which could change raptor prey populations beyond the natural range of variation.
- Avoid or minimize impacts to habitats preferred by raptors for nest and roost locations.
- Identify high-use habitat and nest aggregation areas for species which demonstrate group behavior.
- Avoid or minimize habitat fragmentation.
- Mitigate for unavoidable habitat losses.
- Monitor to determine suitability and efficacy of mitigation.

Bellevue Habitat Review:

- Preserve large patches of native vegetation when possible.
- Limit or control human-introduced disturbances, including pets, hiking, refuse, and noise in habitat patches.
- Remove non-native plant species and replace with natives.
- Preserve and encourage heterogeneity of landscapes to maximize diversity.
- Preserve and encourage recruitment of special habitat features.
- Plan for and maintain habitat corridors between habitat patches.

Pileated Woodpecker

Pileated woodpeckers build nests in large snags or decaying live trees. Researchers reported nest trees and roost trees typically had a DBH >27 inches in a study in Washington and Oregon (Aubry and Raley 2002b). They will forage on wood in various levels of decay, but prefer large snags that harbor abundant insects. The species is often

spotted in suburban areas in King County. Habitat features present on site that are suitable pileated woodpecker habitat include mixed forest with large downed wood and standing snags. The breeding and nesting period is late March-early July. Multiple large snags and downed wood likely provide forage opportunities for the species. The site might also provide suitable nesting sites for pileated woodpeckers, although no woodpecker nests were observed during the site visit. Woodpecker signs consistent with use by larger woodpecker species such as pileated woodpeckers were observed on the property.

Management Recommendations

PHS general management recommendations for pileated woodpeckers include: maintaining large snags and large decaying live trees and trees, stumps, and downed wood containing prior pileated woodpecker nests or foraging excavations should be retained. The PHS management recommendations (2005) for pileated woodpeckers specific to both Western Washington and Urban/Suburban Areas likely apply to the study site:

Western Washington

- Larger home ranges are estimated at just over 2100 ac on the Olympic Peninsula.
- Maintain coniferous forests (stands with >70% conifer trees) of about 60 years of age or older at >70% canopy cover.
- Manage these forests for an average of 2 snags/10 ac that are 30'' in diameter.
- Retain an average of 7 snags/ac $\geq 90'$ in height with diameters ranging between 61-122'' in forests used for both nesting and roosting (Note: Retained trees should consist of those within this diameter range rather than consisting entirely of trees at the minimum recommended diameter).
- In addition to snags retained for nesting and roosting, retain an average of 12 snags/ac as foraging trees in the following size classes:
 - Size class (diameter): 10-20'', snags retained: $\geq 7/\text{ac}$
 - Size class (diameter): 20-30'', snags retained: $\geq 3/\text{ac}$
 - Size class (diameter): $\geq 30''$, snags retained: $\geq 2/\text{ac}$

Urban/Suburban Areas

- Some of the above recommendations may not be possible due to the availability of trees, snags, and habitat on a proposed development in urban/suburban areas. Where habitat and tree availability is sufficient, follow the western/eastern Washington guidelines above. Where availability is insufficient we recommend the following guidelines:
 - Target larger forest patches with large trees and snags for conservation during the planning process.
 - Retain forest in the largest patches available (>74 ac would be considered large). Where large patches are unavailable, smaller patches should be retained; the average size of smaller patches should be no less than

approximately 7 ac. This acreage could be attained through cumulative retention by various adjacent landowners within an urban landscape.

- Retain or create snags as well as retain live trees in the largest size classes available in the stand.



Figure 2: Densely vegetated portion of the parcel



Figure 3: Typical conditions on site.



Figure 4: Approximate location of proposed residence (looking towards northwest corner of parcel).



Figure 5: Vegetation conditions on site.



Figure 6: Evidence of woodpecker foraging on site.



Figure 7: Trash disposed on site.



Figure 8: Empty bird nest documented on site.



Figure 9: Snags documented on site.



Figure 10: Invasive weeds documented on site. Top left: knotweed documented in wetland area. Top right: English holly documented throughout site. Bottom: creeping buttercup documented primarily in wetland area.

3 LOCAL REGULATIONS

3.1 Geologically Hazardous Areas

In Bellevue, steep slope and landslide hazard critical areas are governed by Critical Areas Ordinance No. 5680. According to LUC 20.25H.120(A)(2), slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area are designated as geologic hazard areas and therefore subject to the regulations of LUC 20.25H.120 through 20.25H.125. According to LUC 20.25H.120(B)(1)(b), steep slope critical areas require a top-of-slope buffer of 50 feet. Further, pursuant to LUC 20.25H.120(C)(2), steep slopes require a toe-of-slope setback of 75 feet.

According to LUC 20.25H.120(A)(1), slopes of 15 percent or more with more than 10 feet of rise may be considered a landslide hazard area if it meets certain criteria. The Critical Slope Mitigation Report from LS&E determines that portions of the site meet the criteria to be considered a landslide hazard area. Landslide hazard areas require the same top-of-slope buffer (50 feet) and toe-of-slope setback (75 feet) as steep slopes.

Geologic hazard area buffers and/or setbacks can only be modified through an approved critical areas report. The applicant must demonstrate that the modifications to the critical area buffer or setback, combined with any restoration efforts, will result in equivalent or better protection of critical area functions and values than would result from adhering to the standard application of the regulations (LUC 20.25H.230). Restoration may involve restoring degraded portions of the buffer or setback, removing invasive plant species, and/or planting native vegetation within the critical area, buffer, or setback. An approved restoration plan would require monitoring and maintenance in accordance with LUC 20.25H.220.

Prior to allowing critical area buffer modifications, non-critical area setbacks are to be reduced to the maximum extent allowed. Pursuant to LUC 20.25H.040.B, the front yard setback for the subject parcel can be reduced from 35 feet to 25 feet.

3.2 Wetlands

Wetlands are also governed by Critical Areas Ordinance No. 5680. According to LUC 20.25H.095(C), Category III wetlands with a habitat score lower than 20 require a buffer of 60 feet and an additional structure setback of 15 feet. As described above for geologic hazard areas, modification to the wetland buffer or setback can be accomplished through an approved critical areas report. No modifications to the wetland buffer are proposed. No structural elements are proposed within the wetland setback; however, minor clearing and grading will occur within the setback.

3.3 Streams

Streams in Bellevue are regulated by Critical Areas Ordinance No. 5680. According to LUC 20.25H.075(C), Type O streams on an undeveloped site require a buffer of 25 feet and an additional structure setback of 10 feet. As described above for geologic hazard areas, modification to the stream buffer or setback can be accomplished through an approved critical areas report. No modifications to the stream buffer are proposed. No structural elements are proposed within the stream setback; however, minor clearing and grading will occur within the setback.

3.4 Species of Local Importance

Habitat associated with species of local importance is designated as a critical area (LUC 20.25H.150). The uses in the underlying land use district are allowed within habitat of species of local importance, provided that the proposal implements the wildlife management plan developed by the Washington Department of Fish and wildlife for such species (LUC 20.25H.155-160). The project contains habitat for species of local importance. The species and habitats and appropriate management recommendations, along with additional critical area report requirements are provided in this document.

4 PROJECT DESCRIPTION

The proposed project will construct a single-family residence and appurtenances on an undeveloped parcel. The proposed project involves a small reduction of the toe-of-slope setback from the standard 75-foot width, to an approximate minimum of 55 feet. The proposed setback reduction will be offset through a mitigation and monitoring plan. Minor clearing and grading impacts are proposed within the wetland and stream setbacks. Implementation of the mitigation and monitoring plan will result in an improvement in ecological function of the on-site critical area and critical area buffer and setback areas over the current conditions. Temporary impacts to the setback will also be re-vegetated with native trees and shrubs.

4.1 Project Purpose

The project purpose is to construct a single-family home and appurtenances. The house design is roughly commensurate, in terms of size and amenities, with surrounding homes in the neighborhood. The 2-story home will include a driveway, parking area, garage, and deck.

4.2 Mitigation Sequencing

Pursuant to LUC 20.25H.215, attempts to avoid and minimize impacts to the on-site critical areas and buffers/setbacks have been taken.

Avoidance: The proposed project seeks to avoid impacts to on-site critical areas and critical area buffers and setbacks. The initial proposed configuration of the residence would have resulted in direct impacts to the stream, the stream and wetland buffer and setback, and the steep slope setback. The proposed residence configuration was dramatically redesigned in an effort to avoid impacts to the critical areas to the greatest extent feasible. Direct impacts to all on site critical areas, including the stream area, the wetland area, the geologic hazard area have been avoided. Wetland and stream buffer impacts have also been avoided. However, the site conditions related to critical areas, topography and access require a specific configuration of the house and access that results in minimal impacts to the geologic hazard area toe-of-slope setback. Temporary grading impacts will also occur to the stream and wetland setbacks.

Critical areas and buffers encumber the vast majority of the site. The developable envelope is further constrained by zoning setbacks. Minor impacts to the toe-of-slope setback are proposed in order to configure a typical rectilinear residence. Minor clearing and grading impacts are proposed within the stream and wetland structure setbacks. However, structural impacts to the stream and wetland setback have been avoided.

Minimization: Minimization techniques were utilized during the design process in order to limit impacts to the toe-of-slope setback and the wetland and stream structure setbacks. The proposed access and parking area were designed to be the minimum necessary to accommodate the owners' vehicles and guests' vehicles while still allowing adequate room to turn around. The proposed residence is located immediately adjacent to the parking area in order to minimize the necessary intrusion into the geologic hazard critical area. Temporary stream and wetland structure setback impacts will be revegetated to minimize impact.

Mitigation: As mitigation for modifying the standard toe-of-slope setback, invasive weeds will be removed and controlled and native trees and shrubs will be installed. Specifically, knotweed species are present in the wetland and wetland buffer area. Weed control will involve removal and control of knotweed throughout the wetland and buffer area. The proposed removal of invasive weeds and installation of native trees and shrubs will compensate for the minor modification/impacts of stream, wetland and toe-of-slope setbacks. Any downed wood in the proposed development area, and trees proposed for removal, where feasible, shall be retained and disbursed on site to mitigate for potential impacts to pileated woodpecker habitat. Overall, the proposed mitigation plan will result in an improvement in critical area and critical area buffer functions and values over the current condition.

4.3 Non-Critical Area Setback Reduction

Prior to allowing critical area buffer modifications, non-critical area setbacks are to be reduced to the maximum extent allowed. Pursuant to LUC 20.25H.040.B, the front yard setback for the subject parcel (zoned R-1) could be reduced from 35-feet to 25-feet. The proposed plan incorporates this required setback reduction.

5 IMPACT ASSESSMENT / LIFT ANALYSIS

As mentioned in the previous section, a portion of the proposed single-family residence will be located within the standard toe-of-slope setback. Overall the proposed project will result in 1,347 square feet of impacts to setback areas. The parcel will have its toe-of slope setback reduced from 75 feet to a minimum width of 55 feet. Of this area, 1,184 square feet will be restored with native vegetation following construction of the home. However, the proposal includes mitigation for the entire 1,347 square feet of initial impact. Table 2 below details proposed setback impacts. It also describes the proposed enhancement.

Table 2. Impact/Mitigation Assessment

Impacts	Type of Impact	Sq. Ft.
Critical Area	---	0
Critical Area Buffer	---	0
Geologic Hazard Setback	Grading/Structure	1,130
Wetland Structure Setback	Grading	119
Stream Structure Setback	Grading	98
Total		1,347
Mitigation / Restoration		
Knotweed Removal / Enhancement	---	7,600
Setback Restoration	---	1,184

The current condition of the site is relatively intact, consisting of second-growth mixed forest. The site provides high habitat function for birds and wildlife. The proposed restoration plan seeks to preserve and maintain the existing habitat functions and values onsite while enhancing areas infested with invasive weeds.

The proposed project includes enhancement of wetland and wetland buffer area (which also overlaps with the toe-of-slope setback) to compensate for the 1,347 feet of setback impact proposed. Knotweed areas are concentrated in the wetland area and wetland buffer. All knotweed areas will be removed and controlled. The area of knotweed is estimated to be approximately 7,600 square feet in size. In order to ensure knotweed eradication is maintained over time, native trees and shrubs will be installed to replace knotweed after removal is complete. The wetland has a distinct outflow point, which indicates that there is a potential for knotweed to spread downslope. Removal of knotweed from the wetland area will serve to prevent further spread of knotweed to downslope areas.

Overall, invasive weed control and installation of a variety of native vegetation will improve the overall functions and values of the on-site critical areas and critical area buffers and setbacks. An analysis of the specific functions and values provided by the existing site and the post-project site is provided in Table 3.

Table 3. Functional Lift Analysis

Critical Area/ Buffer Functions	Existing Conditions	Proposed Conditions	Functional Improvement?
Water Quality	Most of the existing critical areas and critical area buffers are composed of native trees and shrubs with some invasive shrubs and groundcovers scattered throughout the understory. The existing vegetation serves to trap and filter sediments.	Remove invasive knotweed from the wetland and wetland buffer. Install native trees and shrubs in knotweed areas. Preserve wetland and stream buffers.	Water quality will be maintained. Preserved native vegetation will continue to help filter storm water.
Steep Slope Stability	Per the Critical Slope Mitigation Report (LS&E), the existing slope is stable under current conditions. Existing vegetation serves to limit erosion potential.	Construct residence according to recommendations in the Critical Slope Mitigation Report (LS&E). Remove invasive species and replace knotweed areas with native trees and shrubs.	According to the Critical Slope Mitigation Report (LS&E), constructing the proposed residence according to recommendations set forth in the report will not result in a decrease in slope stability.
Habitat	On site critical areas and critical area buffers contain a variety of native vegetation types and species. These areas are fragmented and surrounded by development, which prevents migration of terrestrial wildlife. Invasive knotweed is present in the wetland area. Invasive The site provides habitat for species of local importance.	The proposed building footprint will result in minor impacts to the toe-of-slope setback. Remove invasive knotweed within the wetland area and wetland buffer area and replace with native trees and shrubs. Preserve stream and wetland critical areas and associated buffers. Where feasible, retain and distribute woody debris and trees removed for development on-site.	Forage and cover opportunities for wildlife will be maintained by preserving existing vegetation within the wetland and stream areas and associated buffers. Vegetation will be preserved in the toe-of-slope setback to the maximum extent feasible. Impacts associated with the toe-of-slope setback impact will be offset by removing and controlling invasive species on site. Replacing the existing knotweed monoculture with a diversity of native trees and shrubs will improve forage and cover opportunities as well as structural diversity. Control of knotweed on site will improve habitat conditions, and prevent spreading of knotweed downstream through the outflow. Woody debris will provide foraging opportunities for pileated woodpeckers.

Critical Area/ Buffer Functions	Existing Conditions	Proposed Conditions	Functional Improvement?
Net Condition	Existing critical areas and critical area buffers and setbacks are relatively intact, with the exception of minor invasive weed infestations. The existing condition provides moderate levels of function for protecting water quality, slope stability, and habitat. The presence of invasive weeds on site indicates the potential for site habitat and water quality conditions to deteriorate. Per the Critical Slope Mitigation Report (LS&E), slope conditions are currently stable.	The new residence will be constructed as recommended in the Critical Slope Mitigation Report (LS&E) so that slope stability will not decrease. On site wetland and stream areas and associated buffers will be preserved and enhanced through invasive weed control and native plantings. Where feasible, woody debris will be retained.	The proposed minor reduction of the standard toe-of-slope setback, combined with the proposed site plan and restoration plan will represent a net improvement in critical area buffer functions and values. While the toe-of-slope setback width will be reduced and new structure area is proposed within the setback, the proposed restoration plan will result in a decrease in invasive weed species and an increase in structural and vegetative diversity in the existing degraded portions of the critical area and buffers. The improvement in vegetative diversity will increase wildlife foraging and cover opportunities. Weed control will prevent knotweed proliferation downstream which would otherwise further degrade habitat conditions. Foraging opportunities for woodpeckers will be maintained.

Water quality and slope stability will be maintained by implementing the proposed restoration plan. Implementation of the proposed mitigation plan will result in improved critical area and critical area buffer habitat functions and values on site.

6 CRITICAL AREAS REPORT CRITERIA

As previously mentioned, steep slope critical area buffers may be modified pursuant to LUC 20.25H.230. The Director may approve modifications if it can be shown that, through restoration, the modification will result in equivalent or better protection of critical area functions and values. Proposed restoration actions will serve as mitigation for the loss of 1,347 square feet of critical area setback. An area of wetland and wetland buffer, approximately 7,600 square feet in size, will be enhanced through weed control and installation of 84 native trees and 183 native shrubs. The planting layout

incorporates a diversity of native plant species. The restoration plan will provide for improved critical area and buffer functions and values relative to the existing condition. A monitoring and maintenance plan for the proposed mitigation area is also included in this report.

Per the LUC, the critical areas report must meet specific decision criteria in order for the Director to approve a proposal to modify the regulated geologic hazard toe-of-slope setback. Compliance with the relevant critical areas report criteria listed in LUC 20.25H.250(B) is addressed below.

1. *Identification of each regulation or standard of this code proposed to be modified.*

The subject site contains areas of geologic hazards, as defined by LUC 20.25H.120(A)(1) and (2). Pursuant to LUC 20.25H.120(B)(1)(b), a 75-foot toe-of-slope setback is required. The applicant proposes reduce the toe-of-slope setback to a minimum of 55 feet in order to construct a single-family residence. The proposal complies with the remaining regulations and standards of this code.

3. *A habitat assessment consistent with the requirements of LUC 20.25H.165.*

1. *Detailed description of vegetation and habitat on and adjacent to the site;*

See Section 1.2 and 2.

2. *Identification of any species of local importance that have a primary association with habitat on or adjacent to the site and assessment of potential project impacts to the use of the site by the species;*

See Section 2.6.

3. *A discussion of any federal, state, or local special management recommendations, including Washington Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the site;*

When there is the potential for species of local importance to be impacted by a proposal, the project is subject to LUC 20.25H.160, which states that a WDFW wildlife management plan be implemented. A discussion of WDFW habitat management recommendations for species of local importance is presented in Section 2.6.

4. *A detailed discussion of the direct and indirect potential impacts on habitat by the project, including potential impacts to water quality;*

See Table 3. The proposed project will result in an improvement in habitat, specifically in the wetland and wetland buffer areas. Habitat benefits will also occur through removal of knotweed within the wetland and buffer. While the proposed project results in a reduction of steep slope setback area, the habitat provided in the on-site critical areas and critical areas buffers and setbacks will be improved by removing invasive species monocultures and replacing them with native tree and shrub communities. Forage and cover opportunities will be improved as the structural diversity is increased and native fruit- and nut-producing species replace the non-native trees and shrubs. Wetland and stream buffers will be preserved and water quality will be maintained.

5. A discussion of measures, including avoidance, minimization, and mitigation, proposed to preserve existing habitats and restore any habitat that was degraded prior to the current proposed use or activity and to be conducted in accordance with the mitigation sequence set forth in LUC 20.25H.215; and

See Section 4 for mitigation sequencing and Section 5 for habitat enhancement details.

6. A discussion of ongoing management practices that will protect habitat after the site has been developed, including proposed monitoring and maintenance programs.

See Section 7.

- 4. An assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development.*

The proposed project does not include any direct impacts to any on-site critical areas. Portions of the wetland and wetland buffer area contain invasive Knotweed. The proposed restoration plan will result in an improvement in critical area functions and values. See Table 3 for more details.

- 5. An analysis of the level of protection of critical area functions and values provided by the regulations or standards of this Code, compared with the level of protection provided by the proposal. The analysis shall include:*

a. A discussion of the functions and values currently provided by the critical area and critical area buffer on the site and their relative importance to the ecosystem in which they exist;

See Table 3.

b. *A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through application of the regulations and standards of this Code over the anticipated life of the proposed development;*

If no action was taken, the residence would not be constructed and the property would not adequately serve the landowners needs. The wetland and wetland buffer area would continue to be dominated by invasive knotweed, and knotweed would likely spread and proliferate throughout the wetland and wetland buffer area as well as downslope areas. Habitat functions and values may decline as invasive weeds proliferated. No new native vegetation would be installed on site. Ecological conditions would not improve.

Instead, the proposed project will result in control of invasive species on site and an addition of native vegetation within the wetland and wetland buffer. The native plantings will maintain or improve stormwater infiltration and provide increased species and structural habitat diversity within the wetland and wetland buffer. Control of knotweed on site will also slow or prevent weed proliferation onto nearby areas. [See also Table 3.]

c. *A discussion of the functions and values likely to be provided by the critical area and critical area buffer on the site through the modifications and performance standards included in the proposal over the anticipated life of the proposed development; and*

By requesting a critical area setback modification pursuant to LUC 20.25H.230, the applicant is provided the opportunity to restore the on-site critical areas and critical area buffers and setbacks. A restoration plan has been prepared (see Appendix A) that details the area proposed for restoration. This plan mitigates for the intrusion of the proposed residence into the standard toe-of-slope setback. Restoration will involve the enhancement of wetland and wetland buffer areas dominated by knotweed through removal of invasive species and planting of native vegetation. The planting layout incorporates a diversity of native plant species. Proposed plantings include Pacific willow, Oregon ash, western red cedar, Sitka spruce, Douglas-fir, big leaf maple, black gooseberry, red-osier dogwood, salmonberry, black twinberry, beaked hazelnut, osoberry, and sword fern. A monitoring and maintenance plan for the proposed mitigation is also included in this report. Overall, a net gain in critical area and critical area buffer functions is proposed. Therefore, the proposed modification of the slope setback and restoration plan will provide a higher level of protection than is provided through the application of the regulations of LUC 20.25H. [See also Table 3]

6. *A discussion of the performance standards applicable to the critical area and proposed activity pursuant to LUC 20.25H.160, and recommendation for additional or modified performance standards, if any.*

A discussion of habitat associated with species of local importance and management recommendations is presented in Section 2. No additional or modified performance standards are recommended.

7. *A discussion of the mitigation requirements applicable to the proposal pursuant to LUC 20.25H.210, and a recommendation for additional or modified mitigation, if any.*

The proposed restoration plan has been developed in accordance with the standards of LUC 20.25H.210 through 20.25H.225. The project applicant proceeded through the design of the proposed project by first attempting to avoid impacts to the on-site critical areas, buffers and setbacks. However, strict application of LUC 20.25H would result in insufficient developable area. Accordingly, the applicant developed a design that provides sufficient developable area while also significantly enhancing the on-site critical areas and critical area buffers. A monitoring and maintenance plan for the proposed mitigation area has also been prepared and is included in this report. The plan includes the components required by LUC 20.25H.220.

To allow a toe-of-slope setback modification through an approved critical areas report, the Director must also find compliance with the decision criteria established in LUC 20.25H.255(A) and (B). Compliance with the relevant sections listed in LUC 20.25H.255(A) and (B) is addressed below.

1. *The modifications and performance standards included in the proposal lead to levels of protection of critical area functions and values at least as protective as application of the regulations and standards of this code.*

A restoration plan that details the areas proposed for restoration as a result of the critical area setback modification has been prepared. The plan mitigates for the proposed structure areas within the slope setback and minor clearing and grading impacts to the wetland and stream setback areas. Restoration will involve removal of invasive species and planting of native vegetation (trees and shrubs) within the critical areas and critical area buffers. The overall planting plan incorporates a diversity of native plant species.

Within the enhancement areas, proposed native plantings will increase species diversity, providing a variety of foraging resources for wildlife. An increase in structural diversity over existing conditions will also result, providing more suitable year-round cover conditions for wildlife,

particularly songbirds. The proposed native plantings will also maintain stormwater functions provided by the critical areas and critical area buffers by allowing filtration of stormwater and by helping to remove pollutants from stormwater on the slope.

Overall, the restoration plan will provide for improved critical area and buffer functions and values relative to the existing condition. The monitoring and maintenance plan will ensure long-term success of the mitigation. [See also Table 3]

2. *Adequate resources to ensure completion of any required mitigation and monitoring efforts.*

A comprehensive five-year maintenance and monitoring plan is included in this report (Section 7). The plan specifies appropriate species for planting and planting techniques, describes proper maintenance activities, and sets forth performance standards to be met yearly during monitoring. This will ensure that restoration plantings will be maintained, monitored, and successfully established within the first five years following implementation. The applicant will comply with any installation assurance or maintenance assurance devices required by the City.

3. *The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site.*

Restoration of the on-site critical areas and critical area buffers will maintain water quality, slope stability and erosion control, and improve habitat. Portions of the wetland and wetland buffer are dominated knotweed monocultures. Knotweed excludes the establishment of trees and shrubs that provide a variety of fruits and nuts and foraging opportunities, and therefore reduces habitat function. The native trees and shrubs included in the restoration plan will provide more structural complexity and foraging opportunities. The dense vegetation will also help to reduce stormwater velocities and filter associated sediments, maintaining or improving water quality. Restoration of the on-site critical areas and critical area buffers will increase the overall habitat function of the area, thereby improving habitat functions on adjacent properties. The minor modification to the slope setback will not result in detrimental impacts to slope stability, water quality, erosion control or habitat. See the Critical Slope Mitigation Report from LS&E for additional discussion of slope stability.

4. *The resulting development is compatible with other uses and development in the same land use district.*

The proposed single-family residence will be compatible with adjacent properties and surrounding development. The subject property is zoned Single Family Residential (R-1). Surrounding parcels are also zoned single-family residential, though densities vary. Parcels to the southeast are also zoned R-1. Parcels to the southwest are zoned R-1.8. Parcels to the east, north, and west are all zoned R-3.5. Adjacent properties mostly contain single-family land uses, all of a similar size. Some adjacent properties are undeveloped.

1. *The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions.*

See preceding paragraphs and Section 5.

2. *The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist.*

Much of the existing critical areas and critical area buffers and setbacks on site are densely vegetated. The majority of critical area and critical area buffer and setback areas will be preserved. The proposed restoration plan focuses on the most degraded areas, and includes removal of invasive weeds along with installation of trees and shrubs within the wetland and wetland buffer areas, in an area that also lies within the toe-of-slope setback.

3. *The proposal includes a net gain in stormwater water quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer.*

The proposed native plantings will maintain or improve stormwater functions adjacent to the slope, allowing filtration of stormwater and by helping to remove pollutants from stormwater on the slope. Overall, stormwater quality is expected to be maintained or improve as a result of the proposed restoration plan.

Modification of a critical area setback requires the applicant to apply for and receive a Critical Areas Land Use Permit. Before issuing a Critical Areas Land Use Permit, the Director must find that the project meets specific decision criteria. Compliance with the applicable Critical Areas Land Use Permit decision criteria listed in LUC 20.30P.140 is addressed below.

- A. *The proposal obtains all other permits required by the Land Use Code.*

The project applicant has applied for a Critical Areas Land Use Permit (LO) to modify the on-site critical area setbacks and to provide mitigation for impacts. No other City of Bellevue land use permits will be required of the project at this time. A Building Permit will be applied for after approval of the LO.

- B. *The proposal utilizes to the maximum extent possible the best available construction, design and development techniques, which result in the least impact on the critical area and critical area buffer.*

As mitigation for impacts associated with the critical area setback modifications, the existing degraded wetland and wetland buffer area will be restored. The applicant has used the best available design and development techniques to design the new residence. To maintain slope stability, the new structure will be constructed according to the recommendations in the Critical Slope Mitigation Report (LS&E). The design allows for continuity with the surrounding neighborhood while providing adequate enhancement. There are no direct impacts proposed in any critical areas.

- C. *The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable.*

See below for geologic hazard area performance standard compliance (per LUC 20.25H.125) and wetland performance standard compliance (per LUC 20.25H.100).

- D. *The proposal will be served by adequate public facilities including streets, fire protection, and utilities.*

The proposed project will be served by adequate public facilities. No new streets will be needed to serve the parcel. Additionally, fire and police protection are currently available.

- E. *The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan.*

A mitigation and restoration plan has been prepared in accordance with the requirements of LUC 20.25H.210. See Section 7 and Appendix A.

F. The proposal complies with other applicable requirements of this code.

The proposed project complies with all other applicable City of Bellevue Land Use Codes.

Modification of a geologic hazard area setback requires the applicant to show compliance with the specific performance standards set forth in LUC 20.25H.125. Compliance with the applicable criteria listed in LUC 20.25H.125 is addressed below.

A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;

See LS&E Critical Slope Mitigation Report.

B. Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;

See LS&E Critical Slope Mitigation Report.

C. The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;

See LS&E Critical Slope Mitigation Report.

D. The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall;

See LS&E Critical Slope Mitigation Report.

E. Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer;

The proposed project was designed to minimize impervious surface areas within critical area buffers and setbacks. In designing the proposed residence, several constraints were taken into account. Topography, access constraints, critical area buffers and setbacks, and development standards guided the configuration of the home. A prior plan included substantial impacts to the stream critical area, wetland buffer and more substantial impacts to the slope setback; the current plan avoids direct impacts to all on site critical areas and avoids impacts to wetland and stream buffers. See LS&E Critical Slope Mitigation Report for additional details.

F. Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;

See LS&E Critical Slope Mitigation Report.

G. Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;

See LS&E Critical Slope Mitigation Report.

H. On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;

See LS&E Critical Slope Mitigation Report.

I. On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and

See LS&E Critical Slope Mitigation Report.

J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210.

See LS&E Critical Slope Mitigation Report. In addition, a restoration plan has been developed, pursuant to LUC 20.25H.210, and is included in Appendix A. The plan will mitigate for areas of critical area setback modification and restore wetland and wetland buffer area.

Finally, modifications to toe-of-slope setbacks can only be approved if the Director determines that compliance with LUC 20.25H.145 has occurred. Compliance with the applicable decision criteria listed in LUC 20.25H.145 is addressed below.

A. Will not increase the threat of the geological hazard to adjacent properties over conditions that would exist if the provisions of this part were not modified;

See LS&E Critical Slope Mitigation Report.

B. Will not adversely impact other critical areas;

See LS&E Critical Slope Mitigation Report.

C. Is designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than would exist if the provisions of this part were not modified;

See LS&E Critical Slope Mitigation Report.

D. Is certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington;

See LS&E Critical Slope Mitigation Report.

E. The applicant provides a geotechnical report prepared by a qualified professional demonstrating that modification of the critical area or critical area buffer will have no adverse impacts on stability of any adjacent slopes, and will not impact stability of any existing structures. Geotechnical reporting standards shall comply with requirements developed by the Director in City of Bellevue Submittal Requirements Sheet 25, Geotechnical Report and Stability Analysis Requirements, now or as hereafter amended;

See LS&E Critical Slope Mitigation Report.

F. Any modification complies with recommendations of the geotechnical support with respect to best management practices, construction techniques or other recommendations; and

See LS&E Critical Slope Mitigation Report.

G. The proposed modification to the critical area or critical area buffer with any associated mitigation does not significantly impact habitat associated with species of local importance, or such habitat that could reasonably be expected to exist during the anticipated life of the development proposal if the area were regulated under this part.

The proposed modification to the toe-of-slope setback does not significantly impact habitat associated with species of local importance. 13 trees are proposed for removal within critical area setbacks, with a total of 30 trees proposed for removal. Trees to be removed are exclusively big leaf maple, with no known nests present. Species that may utilize the site (as described in Section 2.6) would be unlikely to directly utilize the stand of big leaf maple to be removed. However, to mitigate for any loss of habitat associated with the trees, the proposed mitigation plan includes extensive invasive weed control and native vegetation enhancement, including the addition of new trees to the site. Overall, the plan is expected to result in an overall lift in habitat function on the parcel. (see Table 3).

Modification of a wetland setback requires the applicant to show compliance with the specific performance standards for wetlands as set forth in LUC 20.25H.100. Compliance with the applicable criteria listed in LUC 20.25H.100 is addressed below.

Development on sites with a wetland or wetland critical area buffer shall incorporate the following performance standards in design of the development, as applicable:

1. *Lights shall be directed away from the wetland.*

The entire proposed residence will be situated outside of the standard wetland, buffer, and setback. Minor grading impacts will occur within the setback. Orientation of the house will result in the majority of lighting extending to the northwest, toward SE Cougar Mountain Way. Thus, lights are not expected to impact the wetland.

2. *Activity that generates noise such as parking lots, generators, and residential uses shall be located away from the wetland, or any noise shall be minimized through use of design and insulation techniques.*

As mentioned, the new home will be located outside of the on-site wetland and buffer. In fact, the existing roadway (SE Cougar Mountain Road) is the primary noise source in the area and is located directly adjacent to the wetland. Thus, noise levels are not expected to increase compared to the existing site condition.

3. *Toxic runoff from new impervious area shall be routed away from the wetlands.*

The addition of native plantings in the wetland and buffer (following knotweed removal) will help to filter any pollutants.

4. *Treated water may be allowed to enter the wetland critical area buffer.*

Treatment is not proposed.

5. *The outer edge of the wetland critical area buffer shall be planted with dense vegetation to limit pet or human use.*

The outer edge of the wetland buffer (closest to the proposed residence) is well vegetated with native trees and shrubs.

6. *Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended.*

Knotweed removal will involve the use of pesticides, as applied only by a state-licensed applicator and in compliance with all City of Bellevue BMPs.

7 RESTORATION PLAN

This plan has been prepared as mitigation for the reduction of the steep slope buffer on a residential property in Bellevue (Parcel #2524059192). The setback reduction is necessary to accommodate a single-family residence and associated development. The proposed structure is sited to avoid all impacts to critical areas critical area buffers and to avoid impacts to critical area setbacks to the maximum extent feasible, while still providing adequate living space and access and adhering to development standards. The steep slope setback provides substantial ecological function in its current condition.

This proposal will reduce the on-site steep-slope setback from 75 feet to a minimum of 55 feet, for a reduction of 1,347 square feet of wetland, stream and steep slope setback area. To offset the reduction in the standard setback, invasive weed control is proposed throughout the site along with installation of 84 native trees and 183 native shrubs within the wetland and wetland buffer area.

Additionally, separate from the mitigation area, the setback impact areas will also be revegetated with native plants.

Work Sequence (see Materials for items in BOLD)

A **restoration specialist** shall make site visits to verify the following project milestones:

1. Mark the clearing limits with high visibility fencing or similar means.
2. Install erosion control measures as shown on the TESC plan (Sheet W6).
3. Clear all invasive and non-native, ornamental plants to be removed per the plans and details on Page W2. For knotweed removal, follow **knotweed management plan**.
4. Place three inches of compost throughout the entire planting area. Approximate quantity required: 15 yards.
5. Install native plants per planting detail on Page W5.
 - a. Native plant installation shall occur during the dormant season (October 15th through March 1st) in frost-free periods only.
 - b. Layout plant material per plan for inspection by the **restoration specialist**. Plant substitutions will not be allowed without prior written approval of the **restoration specialist**.
 - c. Install plants per planting detail
6. Water each plant thoroughly to remove air pockets

7. Install a temporary irrigation system capable of supplying at least 1-inch of water per week to the entire planted area during the dry season (June 1st through September 30th)
8. Place four inches of **woodchip mulch** over the entire planting area:
Approximate quantity required: 20 cubic yards
9. One year after initial planting, apply a slow-release, phosphorous-free, granular **fertilizer** to each installed plant.

Knotweed Management Plan

These herbicide control methods were developed using information from King County's knotweed control BMPs and City of Bellevue Parks herbicide use practices. Use of imazapyr, a low-toxicity herbicide, is recommended to control knotweed since cutting and digging of roots has proven ineffective, especially for large patches and in a critical area setting where native plants are also present.

1. Stake out Japanese knotweed control area and verify with restoration specialist.
2. At the beginning of June cut stems close to the ground using a machete, loppers or pruning shears. Be sure not to scatter stems or root fragments.
3. Rake and pile up the cut stems on a tarp or a surface where they will dry out. Dried stems can be crushed and composted on site or disposed of in a licensed disposal site.
4. Be sure that all pieces of stems and cut knotweed are disposed of properly to prevent re-infestation.
5. Once stems have been cut down to the ground wait six (6) weeks for stems to regrown to approximately 3'-6' above the ground.
6. Cut any flowers that have appeared in the short grow back period to prevent pollinators from being affected by the herbicides.
7. Herbicide applications should be done in July to September for maximum efficiency so plan cutting accordingly to allow sufficient time for resprouting. Herbicide applications should be conducted only by state-licensed applicators.
8. Following all label directions apply the manufacturer recommended amount of imazapyr by the daubing or painting method to newly the regrown stems of the knotweed.
9. Monitor knotweed infestation and repeat as new starts begin to come back one more time before the first frost.
10. Repeat this procedure in subsequent growing seasons until resprouting has stopped and knotweed is no longer present in the weed removal area.

Maintenance

The site shall be maintained for five years following successful installation.

1. Replace each plant found dead in the summer monitoring visits in the following dormant season (October 15 – March 1). Replacement shall be of the same species and size per plan unless otherwise approved by the **restoration specialist**.

2. General weeding for all planted areas
 - a. At least twice annually, remove competing grasses and weeds from around the base of each installed plant to a radius of 12 inches. Weeding should occur at least once in the spring and once in the summer. Thorough weeding will result in lower plant mortality and associated plant replacement costs.
 - b. More frequent weeding may be necessary depending on weed conditions that develop after plant installation.
 - c. Noxious weeds must be removed from the entire mitigation area, at least twice annually. For knotweed removal, follow the **knotweed management plan**.
 - d. Do not use string trimmers in the vicinity of installed plants, as they may damage or kill the plants.
3. Maintain a four-inch-thick layer of **woodchip mulch** across the entire planting area. Mulch should be pulled back two inches from the plant stems.
4. Inspect and repair the irrigation system as necessary each spring. During at least the first two growing seasons, make sure that the entire planting area receives a minimum of one inch of water per week from June 1st through September 30th

Goals

1. Improve wetland area and wetland buffer function by removing invasive weeds and establishing native trees and shrubs.
 - a. Create a dense, native, tree and shrub community.
 - b. Remove non-native and invasive plant species from the enhancement area.
2. Remove invasive English holly throughout site.

Performance Standards

The following performance standards will be used to gauge the success of the project over time. If all performance standards have been satisfied by the end of year five, the project shall be considered complete and the City of Bellevue shall release the performance bond.

1. Survival
 - a. Achieve 100% survival of all installed trees and shrubs by the end of year one.
 - b. Achieve 80% survival of all installed shrubs and 100% survival of all installed conifers by the end of year two.
 - c. Achieve 80% survival of all installed trees and shrubs by the end of year five.

Survival standards may be achieved through establishment of planted material, recruitment of native volunteers, or replacement plants as necessary.

2. Diversity

- a. Establish at least four native shrub species in the enhancement area by the end of year five. Establishment is defined as five or more individual plants of the same species alive and healthy.
3. Cover
 - a. Achieve 60% cover of native trees and shrubs by the end of year three.
 - b. Achieve 80% cover of native trees and shrubs by the end of year five.
 - c. No more than 10% cover by invasive species listed as Class A, B, or C by the King County Noxious Weed Control Board in any monitoring year.

Monitoring

Prior to the commencement of the monitoring phase, an as-built plan documenting the successful installation of the project will be submitted to the City of Bellevue. If necessary, the as-built report may include a mark-up of the original plan that notes any minor changes or substitutions that occurred. During the as-built inspection, the **restoration specialist** will install at least one 50-foot monitoring transect in the enhancement area. Future cover measurements will be collected along the monitoring transect using the line-intercept method. During the as-built inspection, the **restoration specialist** will establish at least three permanent photo-points.

The site will be monitored twice annually for five years beginning with approval of the as-built report. Each spring the **restoration specialist** will conduct a brief maintenance inspection followed by a memo summarizing maintenance items necessary for the upcoming growing season. The formal late-season monitoring inspection will take place once annually during late summer or early fall. During each late-season monitoring inspection, the following data will be collected:

1. Percent survival of all installed plantings, including species specific counts of installed tree and shrub plantings (Note: Groundcover plants counted in Year-1 only, for warranty purposes).
2. Native woody cover as determined using visual cover class estimates.
3. Estimates of invasive herbaceous plants or groundcover.
4. Visual cover estimates of invasive herbaceous plants or groundcover.
5. The general health and vigor of the installed vegetation.
6. Photographs from fixed photo-points established during the as-built inspection.
7. Any evidence of wildlife usage in the mitigation area.

Monitoring reports shall be submitted annually to the City. Reports shall document the conditions of the site, including quantitative data collected during the monitoring inspection, and shall provide maintenance recommendations that may be necessary to help the site achieve the stated performance standards.

Contingency Plan

If any monitoring report reveal that the restoration plan has failed in whole or in part, and should that failure be beyond the scope of routine maintenance, the applicant will

submit a Contingency Plan to the City of Bellevue for approval. This plan may include replanting, soil amendments or topdressing, substitutions for species selected in the original plan, and adaptive weed control methods.

Materials

1. **Woodchip mulch:** "Arborist chips" (chipped woody material) approximately one to three inches in maximum dimension (not sawdust). This material is commonly available in large quantities from arborists or tree-pruning companies. This material is sold as "Animal Friendly Hog Fuel" at Pacific Topsoils [(800) 884-7645]. Mulch shall not contain appreciable quantities of garbage, plastic, metal, soil, and dimensional lumber or construction/demolition debris. Approximate quantity required: 20 cubic yards.
2. **Compost:** Cedar Grove Compost or equivalent "composted material" per Washington Admin. Code 173-350-220. Approximate quantity required: 15 cubic yards
3. **Biodegradable Erosion Control Fabric:** material shall be coir Matting 900 by Brothers Coir Mills Pvt. Ltd. or equivalent as approved by the owner's representative. Contractor shall procure sufficient quantity to account for overlap and keying into slope.
4. **Approved topsoil:** On-site soil strippings may be used as approved topsoil under the following conditions: soil shall be screened to ½" and free of weeds, sticks, seeds, clay lumps or any non-organic material. Soil must meet the following characteristics:
 - a) Compaction levels appropriate for root growth (75-85% Proctor density)
 - b) Adequate amount of organic matter (2% to 5% organic content by oven dried weight.)
 - c) Plant-appropriate soil nutrient levels and pH
 - d) Adequate drainage: Drainage rate between 1 - 5 inches per hour.If these characteristics are not met, decompact and amend with **compost** per the **restoration specialist's** recommendation.
5. **Fertilizer:** Slow-release, phosphorous-free granular fertilizer. Most commercial nurseries carry this product. Follow manufacturer's instructions for use. Keep fertilizer in weather-tight container while on-site. Fertilizer is only to be applied in years two and three, not in year one.
6. **Restoration specialist:** Qualified professional able to evaluate and monitor the construction of environmental restoration projects.

8 SUMMARY

The proposed project includes construction of a single-family residence and associated appurtenances. The proposal includes a modification of the toe-of-slope setback in order

to construct of a portion of the proposed project within the standard setback. In addition, clearing and grading impacts will occur to areas of the wetland and stream structure setbacks. As mitigation for the setback modifications, the proposal includes the removal of invasive knotweed from an area within the on-site wetland and buffer. Areas of knotweed removal will be restored with native trees, shrubs, and groundcover. Native species include Pacific willow, Oregon ash, western red cedar, Sitka spruce, Douglas-fir, red alder, big leaf maple, black gooseberry, red-osier dogwood, salmonberry, black twinberry, beaked hazel nut, osoberry, and sword fern.

The planting layout incorporates a diversity of native plant species. The restoration plan will provide better protection of critical area functions and values than would be provided by the standard application of the critical area regulations. This includes maintaining or improving water quality functions, increasing wildlife foraging and cover opportunities, and maintaining slope stability. Therefore, an overall net gain in critical area buffer and setback functions and values is proposed.

9 LIMITATIONS

The information contained in this report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in this document. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

APPENDIX A

Restoration Plan

COUGAR RIDGE ESTATE



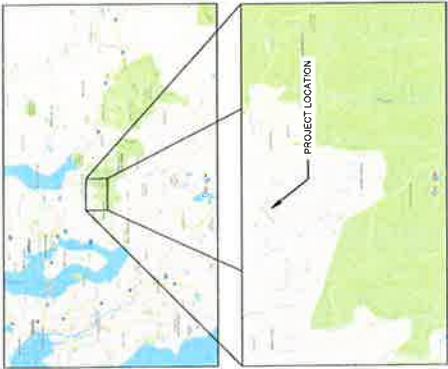
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242
www.watershedco.com

Science & Design

COUGAR RIDGE ESTATE
MITIGATION PLAN
PREPARED FOR VADIM SCHERBININ
APEX ELITE HOMES
16603 SE COUGAR MOUNTAIN WAY
BELLEVUE, WA 98006

NO.	DATE	DESCRIPTION
1	10/04/2016	REVIEW SET
2	10/04/2016	REVIEW SET
3	10/04/2016	REVIEW SET
4	10/04/2016	REVIEW SET
5	10/04/2016	REVIEW SET
6	10/04/2016	REVIEW SET
7	10/04/2016	REVIEW SET
8	10/04/2016	REVIEW SET
9	10/04/2016	REVIEW SET
10	10/04/2016	REVIEW SET
11	10/04/2016	REVIEW SET
12	10/04/2016	REVIEW SET
13	10/04/2016	REVIEW SET
14	10/04/2016	REVIEW SET
15	10/04/2016	REVIEW SET
16	10/04/2016	REVIEW SET
17	10/04/2016	REVIEW SET
18	10/04/2016	REVIEW SET
19	10/04/2016	REVIEW SET
20	10/04/2016	REVIEW SET

SHEET SIZE	11x17
DATE	10/04/2016
PROJECT MANAGER	KB
DESIGNED	KB
DRAFTED	KB
CHECKED	KB
JOB NUMBER	160652
SHEET NUMBER	W1 OF 7



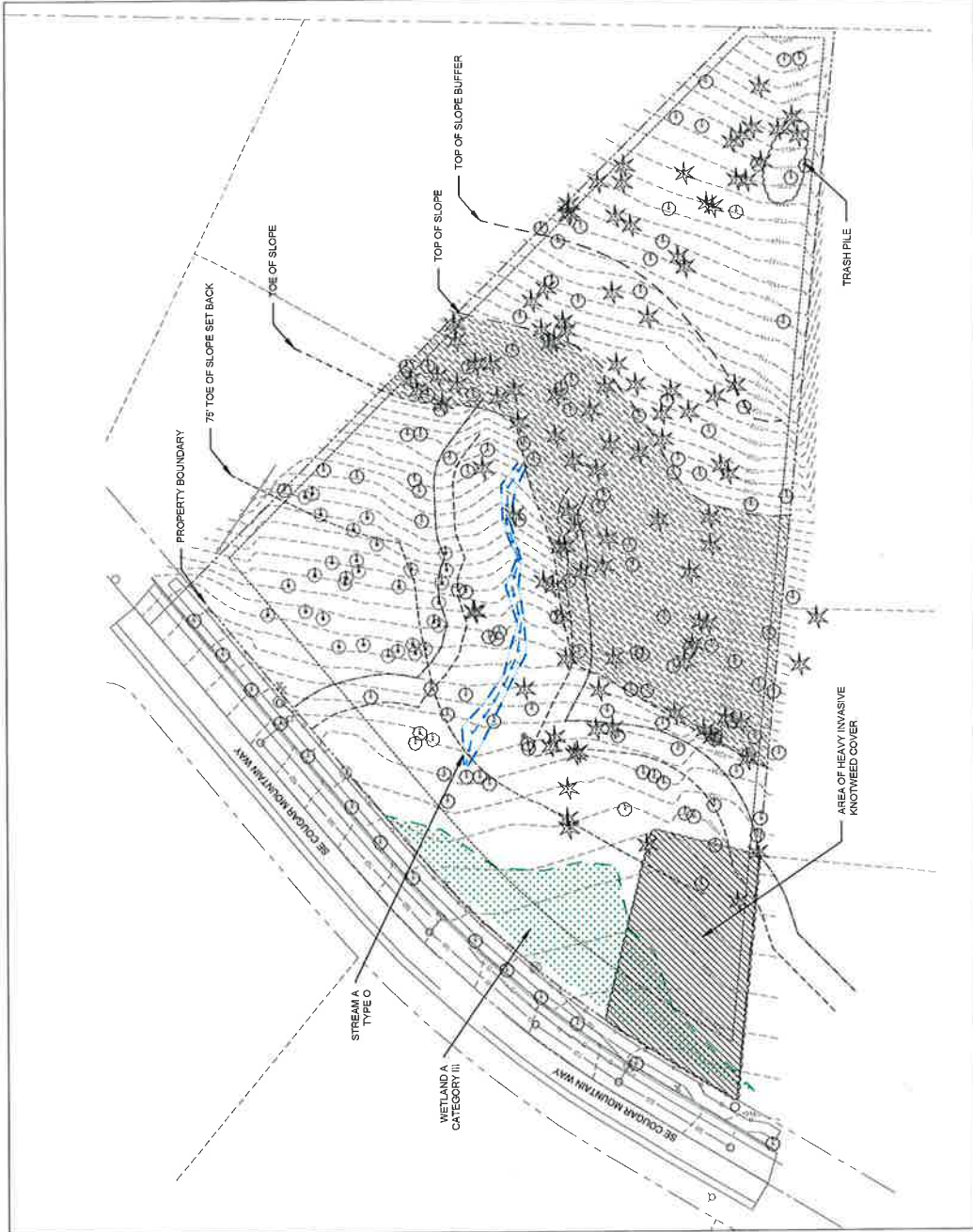
VICINITY MAPS

- SHEET INDEX**
- W1 EXISTING SITE CONDITIONS
 - W2 IMPACTS ASSESSMENT AND MITIGATION PLAN
 - W3 INVASIVE SPECIES MANAGEMENT PLAN
 - W4 PLANT INSTALLATION SPECIFICATIONS AND DETAILS
 - W5 SETBACK IMPACTS RESTORATION PLAN
 - W6 PLANT INSTALLATION SPECIFICATIONS AND DETAILS
 - W7 MITIGATION PLAN NOTES AND DETAILS

- NOTES**
1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY IN JULY AND SEPTEMBER OF 2016
 2. SOURCE OF SLOPE SETBACK FROM APEX ELITE HOMES TO BE RESTORED TO 75% WITHIN 100' OF SLOPE SETBACK
 3. CRITICAL SLOPE AREA DESIGNATED BY LEADY SURVEYORS & ENGINEERS

- LEGEND**
- DELINEATED WETLAND BOUNDARY
 - DELINEATED STREAM OHMM
 - WETLAND AND STREAM BUFFER
 - WETLAND AND STREAM BUFFER 658L
 - TOP OF SLOPE
 - TOP OF SLOPE
 - CRITICAL SLOPE AREA
 - TOP OF SLOPE SETBACK
 - TOP OF SLOPE SETBACK
 - PROPERTY BOUNDARY
 - PROPERTY BOUNDARY

PERMIT SET
NOT FOR
CONTRACTOR
BIDDING



EXISTING SITE CONDITIONS



SUBMITTALS & REVISIONS		DATE	DESCRIPTION
NO.	DATE	DESCRIPTION	
1	10/04/2018	REVIEW SET	
2	10/04/2018	REVIEW SET	
3	10/04/2018	REVIEW SET	
4	10/04/2018	REVIEW SET	
5	10/04/2018	REVIEW SET	
6	10/04/2018	REVIEW SET	
7	10/04/2018	REVIEW SET	
8	10/04/2018	REVIEW SET	
9	10/04/2018	REVIEW SET	
10	10/04/2018	REVIEW SET	

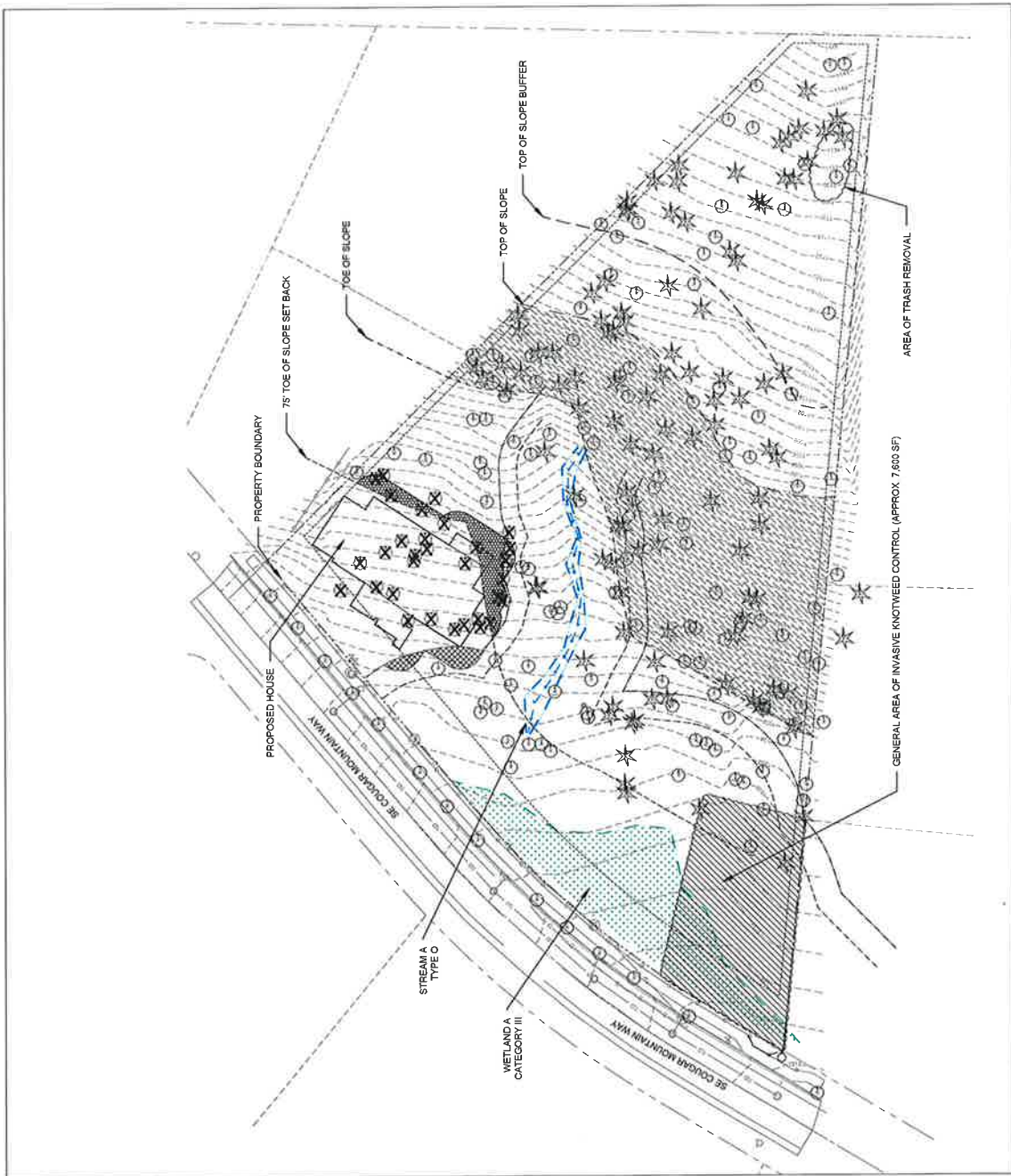
SHEET SIZE: ORIGINAL PLAN IS 22" x 34" SCALE: ACCORDANT	PROJECT MANAGER: KB DESIGNED: KB CHECKED: KB JOB NUMBER: 180652
SHEET NUMBER: W2	OF 7

PERMIT SET

NOT FOR CONTRACTOR BIDDING

NOTES
 1. STREAM SETBACK IMPACTS AND GEOLOGICAL HAZARD SETBACK IMPACT OVERLAP

- LEGEND**
- EXISTING FEATURES**
- DELINEATED WETLAND BOUNDARY
 - DELINEATED STREAM OHWM
 - WETLAND AND STREAM BUFFER
 - WETLAND AND STREAM BUFFER BSBL
 - TOE OF SLOPE
 - TOE OF SLOPE
 - ZZZZ CRITICAL SLOPE AREA
 - TOE OF SLOPE SETBACK
 - TOE OF SLOPE BUFFER
 - PROPERTY BOUNDARY SETBACK
 - PROPERTY BOUNDARY
- PROPOSED FEATURES**
- MAXIMUM LIMITS OF GRADING
 - WETLAND SETBACK IMPACTS (118 SF)
 - STREAM SETBACK IMPACTS (88 SF)
 - GEOLOGIC HAZARD SETBACK IMPACTS (1,130 SF)
 - PROPOSED MITIGATION AREA (7,600 SF)
 - TREES TO BE REMOVED (30)



KNOTWEED REMOVAL PLAN

THESE HERBICIDE CONTROL METHODS WERE DEVELOPED USING INFORMATION FROM KING COUNTY'S KNOTWEED CONTROL BMPs AND CITY OF BELLEVUE PARKS HERBICIDE USE PRACTICES. USE OF IMAZAPYR, A LOW-TOXICITY HERBICIDE, IS RECOMMENDED TO CONTROL KNOTWEED SINCE CUTTING AND DIGGING OF ROOTS HAS PROVEN INEFFECTIVE, ESPECIALLY FOR LARGE PATCHES AND IN A CRITICAL AREA SETTING WHERE NATIVE PLANTS ARE ALSO PRESENT.

1. STAKE OUT JAPANESE KNOTWEED CONTROL AREA AND VERIFY WITH RESTORATION SPECIALIST.
2. AT THE BEGINNING OF JUNE CUT STEMS CLOSE TO THE GROUND USING A MACHETE, LOPPERS OR PRUNING SHEARS. BE SURE NOT TO SCATTER STEMS OR ROOT FRAGMENTS.
3. RAKE AND PILE UP THE CUT STEMS ON A TARP OR A SURFACE WHERE THEY WILL DRY OUT. DRIED STEMS CAN BE CRUSHED AND COMPOSTED ON SITE OR DISPOSED OF IN A LICENSED DISPOSAL SITE.
4. BE SURE THAT ALL PIECES OF STEMS AND CUT KNOTWEED ARE DISPOSED OF PROPERLY TO PREVENT REINFESTATION.
5. ONCE STEMS HAVE BEEN CUT DOWN TO THE GROUND WAIT SIX (6) WEEKS FOR STEMS TO REGROW TO APPROXIMATELY 3'-6" ABOVE THE GROUND.
6. CUT ANY FLOWERS THAT HAVE APPEARED IN THE SHORT GROW BACK PERIOD TO PREVENT POLLINATORS FROM BEING AFFECTED BY THE HERBICIDES.
7. HERBICIDE APPLICATIONS SHOULD BE DONE IN JULY TO SEPTEMBER FOR MAXIMUM EFFICIENCY SO PLAN CUTTING ACCORDINGLY TO ALLOW SUFFICIENT TIME FOR RESPROUTING. HERBICIDE APPLICATIONS SHOULD BE CONDUCTED ONLY BY STATE-LICENSED APPLICATORS.
8. FOLLOWING ALL LABEL DIRECTIONS APPLY THE MANUFACTURER RECOMMENDED AMOUNT OF IMAZAPYR BY THE DUBLING OR PAINTING METHOD TO NEWLY THE REGROWN STEMS OF THE KNOTWEED.
9. MONITOR KNOTWEED INFESTATION AND REPEAT AS NEW STARTS BEGIN TO COME BACK ONE MORE TIME BEFORE THE FIRST FROST.
10. REPEAT THIS PROCEDURE IN SUBSEQUENT GROWING SEASONS UNTIL RESPROUTING HAS STOPPED AND KNOTWEED IS NO LONGER PRESENT IN THE WEED REMOVAL AREA.

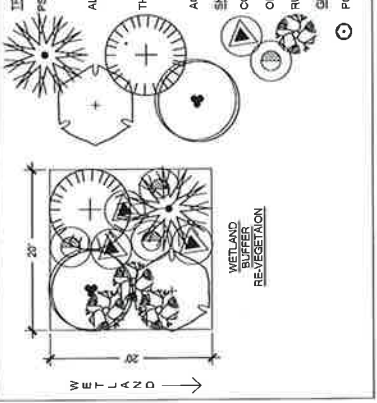


KNOTWEED LEAVES AND FLOWERS



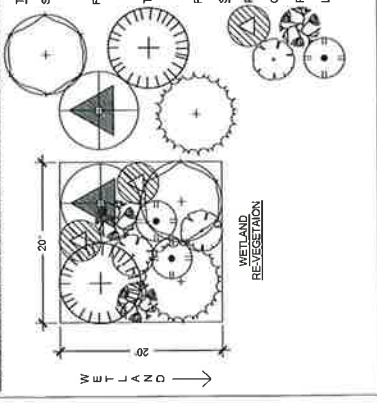
WETLAND BUFFER RE-VEGETATION PLANTING SCHEDULE AND TYPICAL

TREES / MINIMUM SPACING @ 10' O.C.	QTY	SIZE
PSEUDOTSUGA MENZIESII / DOUGLAS FIR	15	2 GAL
ALNUS RUBRA / RED ALDER	15	2 GAL
THUJA PLICATA / WESTERN RED CEDAR	15	2 GAL
ACER MACROPHYLLUM / BIGLEAF MAPLE	15	2 GAL
SHRUBS / MINIMUM SPACING @ 5' O.C.		
CORYLUS CORNUTA / EBANEK HAZELNUT	45	1 GAL
OEMLERIA CERASIFORMIS / OSC BERRY	45	1 GAL
RUBUS SPECTABILIS / SALMONBERRY	45	1 GAL
GROUND COVER / MINIMUM SPACING @ 24" O.C.		
POLYSTICHUM MUNITUM / SWORD FERN	300	4" INCH POT



WETLAND RE-VEGETATION PLANTING SCHEDULE AND TYPICAL

TREES / MINIMUM SPACING @ 10' O.C.	QTY	SIZE
SALIX LASIANDRA / PACIFIC WILLOW	6	2 GAL
FRAXINUS LATIFOLIA / OREGON ASH	6	2 GAL
THUJA PLICATA / WESTERN RED CEDAR	6	2 GAL
PICEA SITCHENSIS / SITKA SPRUCE	6	2 GAL
SHRUBS / MINIMUM SPACING @ 5' O.C.		
RIBES LACINIAE / BLACK GOOSEBERRY	12	1 GAL
CORNUS SERICEA / RED-OSIER (RED TWIG) DOGWOOD	12	1 GAL
RUBUS SPECTABILIS / SALMONBERRY	12	1 GAL
LONGICERA INVOLUCRATA / BLACK THIMBERY	12	1 GAL



- LEGEND
 EXISTING FEATURES
 --- DELINEATED WETLAND BOUNDARY
 --- DELINEATED STREAM CHANNEL
 --- DELINEATED WETLAND AND STREAM BUFFER
 --- WETLAND AND STREAM BUFFER BSSL
 --- TOP OF SLOPE
 --- TOP OF SLOPE
 --- TOP OF SLOPE
 --- TOP OF SLOPE
 --- TOP OF SLOPE
 --- PROPERTY BOUNDARY SETBACK
 --- PROPERTY BOUNDARY

PERMIT SET
 NOT FOR
 CONTRACTOR
 BIDDING



RE-VEGETATION PLAN

NO.	DATE	DESCRIPTION	BY	CHKD.
1	10/04/2018	REVIEW SET	KMB	

SHEET SIZE	11x17
ORIGINAL SCALE	AS SHOWN
PROJECT MANAGER	KMB
DRAWN	KMB
CHECKED	KMB
JOB NUMBER	160652
SHEET NUMBER	W5 OF 7

RESTORED SETBACK IMPACTS PAINTING TYPICAL AND SCHEDULE

QTY	SIZE
16	1 GAL.
16	1 GAL.
16	1 GAL.
32	1 GAL.
32	1 GAL.
32	1 GAL.

SHRUBS / SPACING @ 4' O.C.	
ROSA NOOTKA / NOOTKA ROSE	
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	
SYMPHORICARPOS ALBUS / SNOWBERRY	
ACER CIRCINATUM / VINE MAPLE	
GROUNDCOVERS / SPACING @ 24" O.C.	
POLYSTICHUM MUNITUM / SWORD FERN	
ARCTOSTAPHYLOS UVA-URSI / KINKKINICK	
MAHONIA NERVOSA / DULL MAHONIA	



- LEGEND**
- EXISTING FEATURES**
- DELINEATED WETLAND BOUNDARY
 - DELINEATED STREAM CHANNEL
 - 100' BUFFER FROM WETLAND / STREAM BUFFER
 - WETLAND AND STREAM BUFFER ESSL
 - TOP OF SLOPE
 - TOP OF SLOPE
 - VERTICAL SLOPE AREA
 - RESTORED SETBACK
 - TOP OF SLOPE BUFFER
 - PROPERTY BOUNDARY SETBACK
 - PROPERTY BOUNDARY
- PROPOSED FEATURES**
- MAXIMUM LIMITS OF GRADING
 - RESTORED SETBACK IMPACTS (1,184 SF)

PERMIT SET
 NOT FOR
 CONTRACTOR
 BIDDING



SETBACK IMPACTS RESTORATION PLAN

APPENDIX B

**Wetland and Stream Delineation
Study**

September 26, 2016

Vadim Scherbenin
Apex Elite Homes
1 Lake Bellevue Drive, Suite 111
Bellevue, WA 98005

Re: Wetland and Stream Delineation Study, Parcel #2524059192

The Watershed Company Reference Number: 160652

Dear Vadim:

On July 14, 2016, I visited your approximately 2.3-acre property located on SE Cougar Mountain Way in Bellevue, Washington (Parcel #2524059192). The purpose of the visit was to verify the previous wetland and stream delineation study for the property and adjust the delineated boundaries and classifications, where necessary. This letter summarizes the findings of this study. The following attachments are included:

- Wetland and Stream Delineation Sketch
- *Critical Areas Designation Report, Parcel 2524059192* (H&S Consulting, September 14, 2015) (H&S Study)
- *Drainage Line – Cougar Mountain Road Bellevue Property* (Insight Geologic Inc. September 13, 2015) (IGI Study)

Methods

Public-domain information on the subject property was reviewed for this delineation study. These sources include USDA Natural Resources Conservation Service Soil maps, U.S. Fish and Wildlife Service National Wetland Inventory maps, Washington Department of Fish and Wildlife interactive mapping programs (PHS on the Web and SalmonScape), and King County's GIS mapping website (iMAP). Additionally, the H&S and IGI Studies were reviewed prior to the site inspection.

The study area was evaluated for wetlands using methodology from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (Regional Supplement) (US Army Corps of Engineers [Corps] May 2010). The wetland boundary was determined on the basis of an examination of vegetation, soils, and hydrology. Areas meeting the criteria set forth in

the Regional Supplement were determined to be wetland. Soil, vegetation, and hydrologic parameters were sampled at several locations along the wetland boundary to make the determination.

The ordinary high water mark (OHWM) of the on-site stream was determined based on the definition provided by the Washington Department of Fish and Wildlife and WAC 173-22-030(5). The OHWM is located by examining the bed and bank physical characteristics and vegetation to ascertain the water elevation for mean annual floods. Areas meeting the definition were determined to be the OHWM and flagged. Field observations were used to classify streams according to the Bellevue Land Use Code (BLUC).

Findings

The property is located in a residential area in Bellevue; Zone R-1; Section 25, Township 24 North, Range 5 East; Coal Creek Drainage Basin; Cedar-Sammamish Watershed Resource Inventory Area (WRIA 8). The property is currently undeveloped and supports a mixed deciduous-coniferous forest dominated by bigleaf maple and western red cedar in the canopy, with osoberry, vine maple, red elderberry, snowberry, and sword fern prevalent in the understory. The property slopes moderately (15-20 percent on average, per iMAP) uphill towards the east.

The H&S Study, which summarizes the findings of an August 2015 site inspection, identifies one wetland, Wetland A, and one “unregulated drainage” on the property. Per the H&S Study, Wetland A is classified as a Category III wetland with a standard 60-foot buffer and 15-foot building setback.

Wetland A

Wetland A is located in the southwest corner of the property. The wetland boundary was originally marked with five flags. The individual flags were correctly located on the boundary; however, the spacing between the flags was farther than typically accepted for wetland delineation studies. Therefore, five additional flags were placed on the wetland boundary to more accurately depict the boundary. The Watershed Company agrees with the classification of Wetland A as a Category III wetland with a habitat score of less than 20 points, per the 2004 Ecology Wetland Rating System. The associated 60-foot buffer and 15-foot building setback are correct, per BLUC 20.25H.095.C&D.

Stream A

The H&S Study incorrectly identified Stream A as an “unregulated drainage” based on an analysis from Insight Geologic, Inc. (IGI Study). The IGI Study noted that the water source for the feature appeared to be derived from a plastic pipe that conveys stormwater from adjacent properties. The Watershed Company disagrees with this

conclusion. While plastic pipes within the stream channel appear to be an attempt to manipulate the flow, the source of the water is from a groundwater seep at the top of the channel. The topography in the area is also suggestive of a natural conveyance in this location. Stream A supports very little flow, with no more than one or two inches likely present at any time. The channel is narrow at the top, but it broadens out slightly at the base of the hillside and infiltrates into the gravelly soils without connecting to any other streams or wetlands. The low flows, steep gradient (18 percent, per iMAP), and lack of connectivity to other waters preclude fish use in Stream A. As a non-fish-bearing stream that is not connected to any other streams or wetlands via a surface water connection, Stream A is classified as Type O (BLUC 20.25H.075.B.4). Type O waters on undeveloped properties require a standard buffer width of 25 feet (BLUC 20.25H.075.C.1.a.i) and an additional building setback of 10 feet (BLUC 20.25H.075.D.2.a.i).

Disclaimer

The information contained in this letter or report is based on the application of technical guidelines currently accepted as the best available science and in conjunction with the manuals and criteria outlined in the methods section. All discussions, conclusions and recommendations reflect the best professional judgment of the author(s) and are based upon information available to us at the time the study was conducted. All work was completed within the constraints of budget, scope, and timing. The findings of this report are subject to verification and agreement by the appropriate local, State and Federal regulatory authorities. No other warranty, expressed or implied, is made.

Please call if you have any questions or if we can provide you with any additional information.

Sincerely,



Ryan Kahlo, PWS
Ecologist

Enclosures



September 14, 2015

Mr. Vadim Scherbinin
Apex Elite Homes
One Lake Bellevue Drive Suite #111
Bellevue, WA 98005

Subject: Critical Areas Designation Report, Parcel #2524059192

Mr. Scherbinin,

As requested we have evaluated your property for jurisdictional wetlands, streams, and required buffers. The property is located along SE Cougar Mtn. Way [no address] (parcel # 2524059192) in City of Bellevue.



Vicinity Location Map

----- P. O. Box 731695 • Puyallup WA 98373 -----
(253) 732-6515 MHeckert@Q.com

Location and Existing Conditions

This property is rectangular, 102,184 sq. ft., and is currently vacant. The north, south, and east boundary of the site is single-family development.

Legal: LOT 2 KCSP #879009 REC # 8109100499 SD SP DAF THAT POR OF NE 1/4 OF NW 1/4 OF NW 1/4 LY SELY OF PETER JOHNSON RD

Methodology

The site visit was conducted on August 1, 2015. A combination of field indicators, including: soils, vegetation, and hydrology, were used to determine whether wetlands were present. The methodology used to identify jurisdictional wetlands is described in the the *Corps of Engineers (CoE) Wetland Delineation Manual - 2010 Western Mountains, Valleys, and Coast (WMVC) Regional Supplement, Revised Washington State Wetland Rating System (WSWRS)*, and King County Code 21A-24.

Wetlands are transitional areas between aquatic and upland habitats. In general terms, wetlands are lands where the extent and duration of saturation with water is the primary factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (Cowardin et al., 1979). Wetlands are generally defined as *"those areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."* (King County Title 24A).

Wetlands exhibit three (3) essential characteristics, all of which must be present for an area to meet the established criteria within the CoE Manual. These essential characteristics are:

Hydrophytic Vegetation: Meaning a predominance of plants that are typically adapted for life in saturated soils,

Hydric Soil: Meaning soil's that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper horizons, and

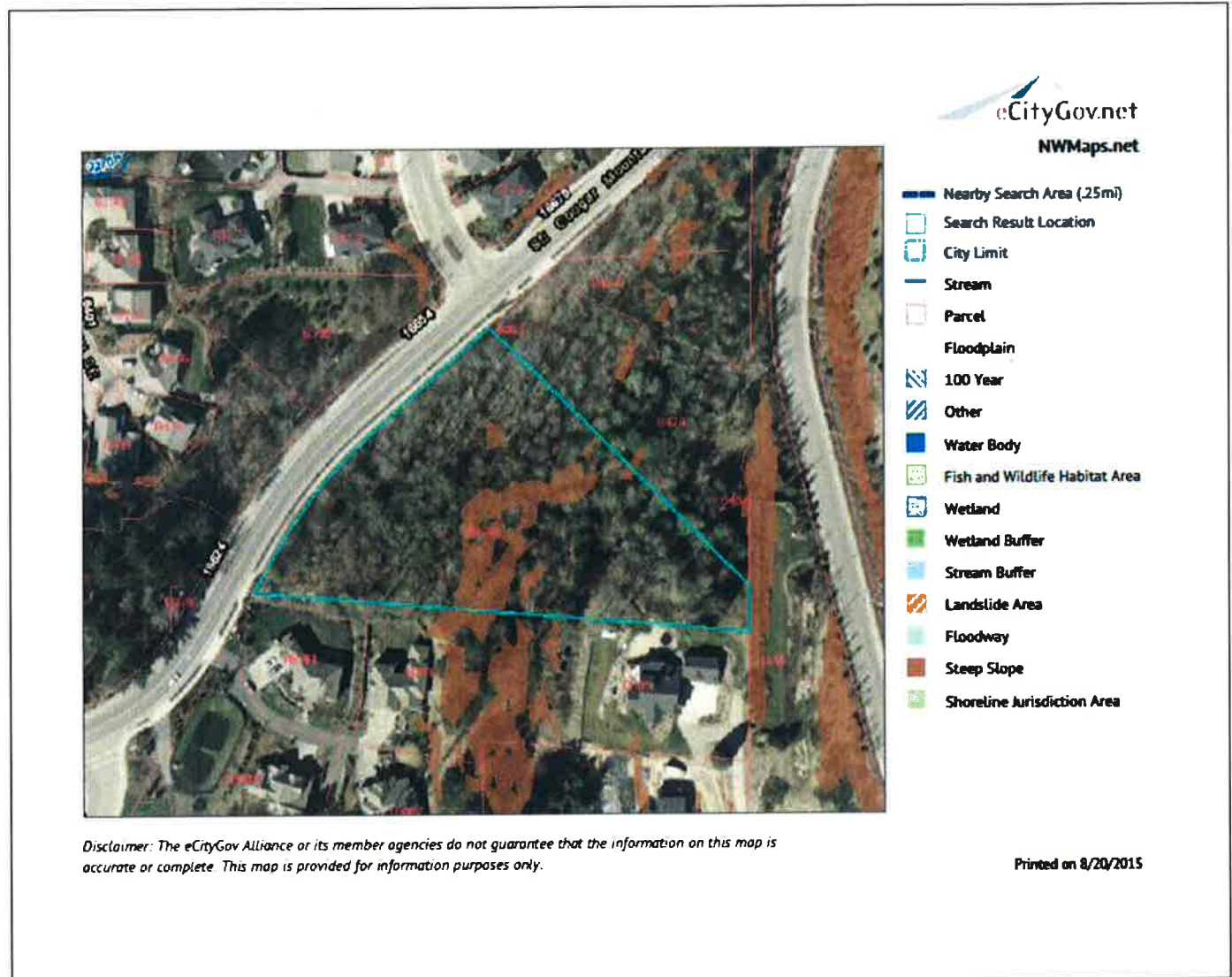
Wetland Hydrology: Meaning permanent or periodic inundation, or soil saturation to the surface, at least seasonally.

Streams were delineated by the Ordinary High Water Mark (OHWM).

Wetlands were flagged pink and labeled consecutively.

Existing Documentation

The City of Bellevue Critical Areas map describes no wetlands or stream on, or adjacent to, the project site. City critical Areas map shows an area of steep slope through the center of the site.



2524059192 City Critical Areas mapping

Wetlands

One wetland area was identified (Delineated and designated as Wetland A) with pink flagging and labeled. Wetland A is located in the southwest corner of the site.

Wetland A is a shrub-scrub wetland which occurs in a slope configuration. Vegetation includes: Western red cedar (*Thuja plicata*) Sword fern (*Polystichum munitum*), and Climbing nightshade (*Solanum dulcamara*).

Sample plots excavated within Wetland A revealed a 14 inch sandy-loam with a matrix color of 10YR 2/2 with redoximorphic features, underlain by 10YR 2/1 silt loam.

Using the United States Fish and Wildlife Services (USFWS) wetland classification method (Cowardin et al. 1979), Wetland A would be classified as palustrine, forested, seasonally flooded (PSSC) wetland.

Wetland A also appears to meet the City of Bellevue criteria as a Category 3 wetland. Due to its rating/classification this Category 3 Wetland mandates a 60 ft. buffer measured from the wetlands edge. A 15 ft. building setback line (BSBL) is measured from the buffer edge(Att. 1).

A drainage transects the site from the center, flowing west. This drainage originates in a hillside excavation, apparently created to capture a spring. This feature was flowing at the time of assessment, and flows west into the on-site wetland and the road-side drainage culvert. Examination and excavation of the flow source by Insight Geologic (report attached) revealed this flow to originate from a broken drain tile, which originates off-site to the north. As such, this feature is an unregulated drainage by City of Bellevue.

Proposed Site Development

The proposed development for this site entails the siting of a single-family house outside of all regulated critical Areas and their buffers.

No new impact to the on-site Critical Areas will result from the development of the site. All features will be outside the regulated wetland and buffer (Attachment 1).

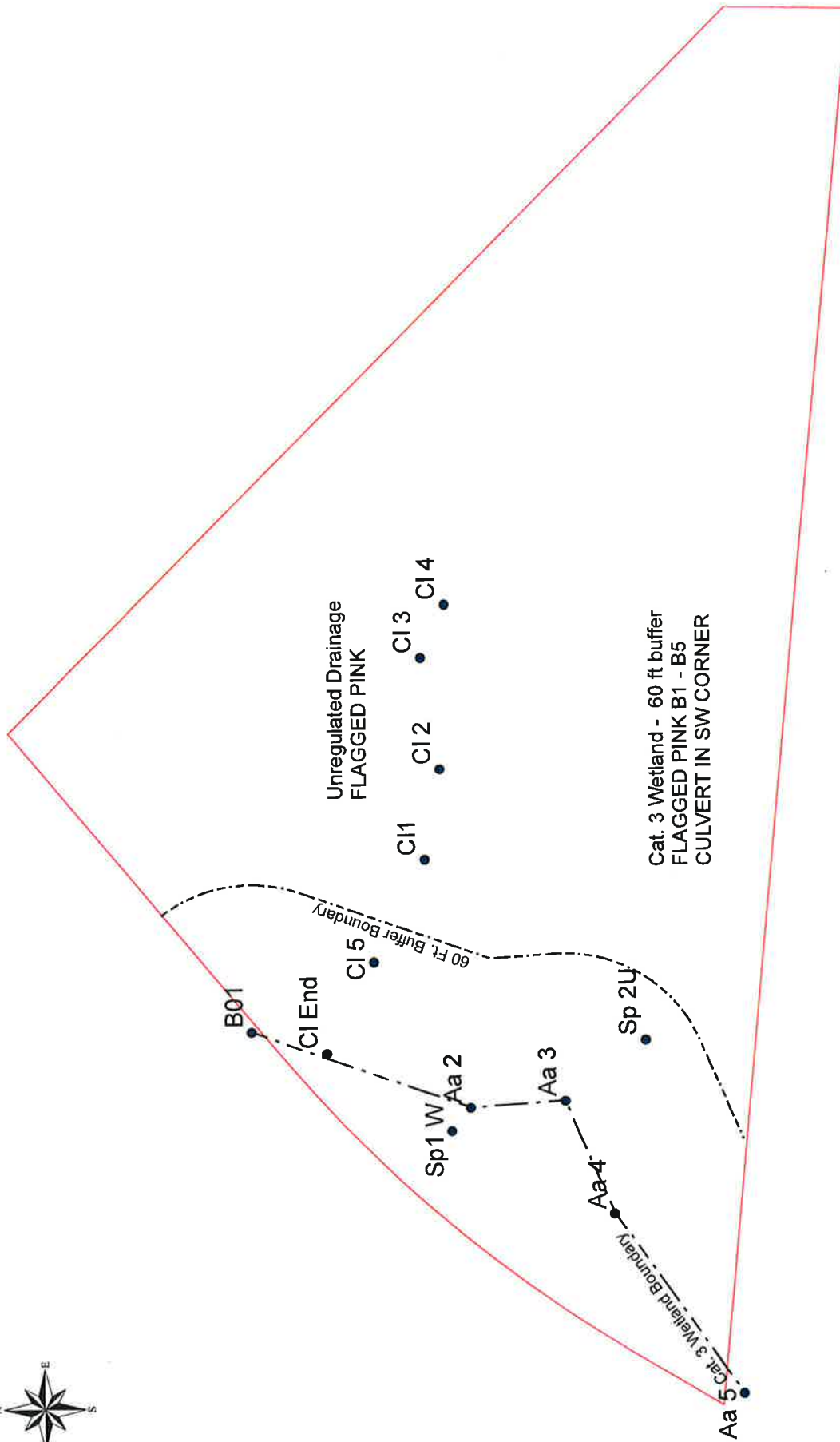
If you have questions or need additional information please contact me at 253.732.6515 or by email at mheckert@q.com .

Respectfully Submitted,

Mark Heckert

H&S Consulting

Att 2 Wetland CAD Map
West WA Wetland Rating Form



1 inch = 60 feet



H & S
Consulting
253 732 6515
MHeckert@Q.com
REVISED 9/14/2015

Apex Bellevue
Parcel # 2524059192
Wetland Delineation Map
From Survey



1015 East 4th Avenue
Olympia, Washington 98506
Telephone: (360) 754-2128
Fax: (360) 754-9299

MEMORANDUM

TO: Vadim Scherbinin - Apex Elite Homes
FROM: William Halbert , LEG, LHg
DATE: September 13, 2015
SUBJECT: Drainage line – Cougar Mountain Road, Bellevue Property

At your request we have evaluated the source of surface water seepage on your property located on Cougar Mountain Road in Bellevue, Washington. The subject property is roughly triangular in shape and slopes down from east to west. The western side of the property is bordered by Cougar Mountain Road, the east and southern portions are bordered by residential property and property owned by the City of Bellevue for stormwater control. The surface water seepage occurs in a shallow swale about the western third of the property and flows overland to discharge in a wetland that borders Cougar Mountain Road. The surface water flow is estimated to be about 5 gallons per minute.

The source area was excavated using shovels to evaluate subsurface conditions which may be contributing to the water flow. A 4-inch diameter corrugated black plastic pipe was encountered at a depth of about 12 inches below ground surface. The pipe was observed to be broken and this break appears to be the source of the surface water flow on the property. The pipe appears to continue underground toward the west and likely discharges to the wetland on the western side of the property.

The pipe appears to serve as a drain from somewhere to the east or north. It has been postulated that the pipe drains water from a water main trench on the eastern side of the property.

It is our opinion that the source of the drainage is not necessarily relevant to the issue. The historic underground piping serves to convey collected water from somewhere upland, to the wetland area to the west. A break in the piping has allowed water to surface and flow overland to its ultimate discharge point at the wetland. We recommend that the piping be repaired and replaced with larger diameter piping from the point of breakage to the discharge point. We recommend installing a cleanout so that the piping can be maintained and cleared in the case of blockage. If the source of the drainage is needed, a camera survey of the piping may be conducted from the point of breakage, uphill to the east. The camera can be traced at the surface using conventional pipe tracing methods.

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated Oct, 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WL A Date of site visit: 8/11/15

Rated by: M. Heckert Trained by Ecology? Yes Date of training: 5/05 5/15

SEC: TWNSHP: RNGE: Is S/T/R in Appendix D? Yes No: X

Map of wetland unit: Figure Estimated size: 7,976 sq. ft.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I II III IV

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions

16

Score for Hydrologic Functions

16

Score for Habitat Functions

13

TOTAL Score for Functions

45

Category based on SPECIAL CHARACTERISTICS of Wetland I II Does not apply N/A

Final Category (choose the “highest” category from above)

III(3)

Cat. 3 WL Buffer = 60 ft. FINAL BUFFER

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	Wetland HGM Class used for Rating
Estuarine	Depressional
Natural Heritage Wetland	Riverine
Bog	Lake-fringe
Mature Forest	Slope
Old Growth Forest	Flats
Coastal Lagoon	Freshwater Tidal
Interdunal	
None of the above	Check if unit has multiple HGM classes present

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)? For the purposes of this rating system, “documented” means the wetland is on the appropriate state or federal database.		X
SP2. Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species? For the purposes of this rating system, “documented” means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
SP4. Does the wetland unit have a local significance in addition to its functions? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

NO – go to 2 YES – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

YES – **Freshwater Tidal Fringe**

NO – **Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland. Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3

YES – The wetland class is **Flats**

If your wetland can be classified as a “Flats” wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;

At least 30% of the open water area is deeper than 6.6 (2 m)?

NO – go to 4

YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?

The wetland is on a slope (*slope can be very gradual*).

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

NOTE: Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

NO – go to 5

YES – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?

The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.

The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

NO – go to 6

YES – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.

NO – go to 7

YES – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

No – go to 8

YES – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

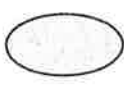
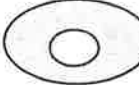




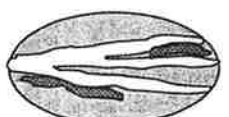
HGM Classes within the wetland unit being rated	HGM Class to Use in Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D Depressional and Flat Wetlands		Points (only 1 score per box) (see p.38)
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.		
D 1	Does the wetland have the <u>potential</u> to improve water quality?	
	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet..... points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>)..... points = 1 Unit is a “flat” depression (Q.7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not <i>permanently flowing</i> treat unit as “ <i>intermittently flowing</i> ”) Provide photo or drawing	Figure — 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (use NRCS definitions) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): Wetland has persistent, ungrazed vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation < 1/10 of area points = 0 Map of Cowardin vegetation classes	Figure — 5
	D 1.4 Characteristics of seasonal ponding or inundation: <i>This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.</i> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	Figure — 2
Total for D 1		9
<i>Add the points in the boxes above</i>		
D 2	Does the wetland have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? <i>Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.</i> <input checked="" type="checkbox"/> Grazing in the wetland or within 150 ft <input checked="" type="checkbox"/> Untreated stormwater discharges to wetland <input checked="" type="checkbox"/> Tilled fields or orchards within 150 ft. of wetland <input checked="" type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft. of wetland <input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen <input type="checkbox"/> Other _____ YES multiplier is 2 NO multiplier is 1	(see p. 44) Multiplier 2
◆ TOTAL – Water Quality Functions		18
Multiply the score from D1 by D2; then <i>add score to table on p. 1</i>		
HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.		
D 3	Does the wetland have the <u>potential</u> to reduce flooding and erosion?	(see p.46)
	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet..... points = 2 Unit is a “flat” depression (Q.7 on key) or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not <i>permanently flowing</i> treat unit as “ <i>intermittently flowing</i> ”) points = 0 Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>)..... points = 0	2
	D 3.2 Depth of storage during wet periods. <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i> Marks of ponding are 3 ft. or more above the surface or bottom of the outlet points = 7 The wetland is a “headwater” wetland..... points = 5 Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet points = 5 Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet points = 3 Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class..... points = 5	3
Total for D 3		8
<i>Add the points in the boxes above</i>		

D 4	<p>Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?</p> <p>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i></p> <p><u>X</u> Wetland is in a headwater of a river or stream that has flooding problems.</p> <p>_____ Wetland drains to a river or stream that has flooding problems</p> <p>_____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems</p> <p>_____ Other _____</p> <p>YES multiplier is 2 NO multiplier is 1</p>	<p>(see p. 49)</p> <p>Multiplier</p> <p>2</p>
◆	<p>TOTAL – Hydrologic Functions Multiply the score from D3 by D4; then <i>add score to table on p. 1</i></p>	<p>16</p>

Comments:

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		
H 1	Does the wetland have the <u>potential</u> to provide habitat for many species?	
H 1.1	<p>Vegetation structure (see P. 72): Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.</p> <p><input type="checkbox"/> Aquatic Bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have > 30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)</p> <p>If the unit has a forested class check if: The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. Add the number of vegetation types that qualify. If you have:</p> <p>4 structures or more.....points = 4 2 structures.....points = 1</p> <p>Map of Cowardin vegetation classes 3 structures..... points = 2 1 structure points = 0</p>	<p>Figure — 2</p>
H 1.2	<p>Hydroperiods (see p. 73): Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).</p> <p><input type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated <input checked="" type="checkbox"/> Occasionally flooded or inundated <input checked="" type="checkbox"/> Saturated only</p> <p>4 or more types present points = 3 3 or more types present..... points = 2 2 types present points = 1 1 type present points = 0</p> <p><input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points</p> <p>Map of hydroperiods</p>	<p>Figure — 2</p>
H 1.3	<p>Richness of Plant Species (see p. 75): Count the number of plant species in the wetland that cover at least 10 ft² (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.</p> <p>If you counted: > 19 speciespoints = 2 5 – 19 speciespoints = 1 < 5 speciespoints = 0</p> <p>List species below if you want to:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>1</p>
H 1.4	<p>Interspersion of Habitats (see p. 76): Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>None = 0 points</p> </div> <div style="text-align: center;">  <p>Low = 1 point</p> </div> <div style="text-align: center;">  <p>Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p>Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always “high”.</p> <p>Use map of Cowardin classes.</p>	<p>Figure — 1</p>
H 1.5	<p>Special Habitat Features (see p. 77): Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) <input type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <input type="checkbox"/> At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p>0</p>
H 1 TOTAL Score – potential for providing habitat		6

Comments:

H 2.3	<p><u>Near or adjacent to other priority habitats listed by WDFW</u> (see p. 82): (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)</p> <p>Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? NOTE: the connections do not have to be relatively undisturbed.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (full descriptions in WDFW PHS report p. 152).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input type="checkbox"/> Old-growth/Mature forests: (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full descriptions in WDFW PHS report p. 158).</p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (full descriptions in WDFW PHS report p. 161).</p> <p><input type="checkbox"/> Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.</p> <p><input type="checkbox"/> Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> Talus: Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p><input type="checkbox"/> Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.</p> <p>If wetland has 3 or more priority habitats = 4 points If wetland has 2 priority habitats = 3 points If wetland has 1 priority habitat = 1 point No habitats = 0 points</p> <p>Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)</p>	
H 2.4	<p><u>Wetland Landscape:</u> Choose the one description of the landscape around the wetland that best fits (see p. 84)</p> <ul style="list-style-type: none"> • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. points = 3 • The wetland fringe on a lake with disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..... points = 3 • There is at least 1 wetland within 1/2 mile points = 2 • There are no wetlands within 1/2 mile points = 0 	3
	H 2 TOTAL Score – opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4	5
	TOTAL for H 1 from page 8	8
◆	Total Score for Habitat Functions Add the points for H 1 and H 2; then record the result on p. 1	13

Comments:

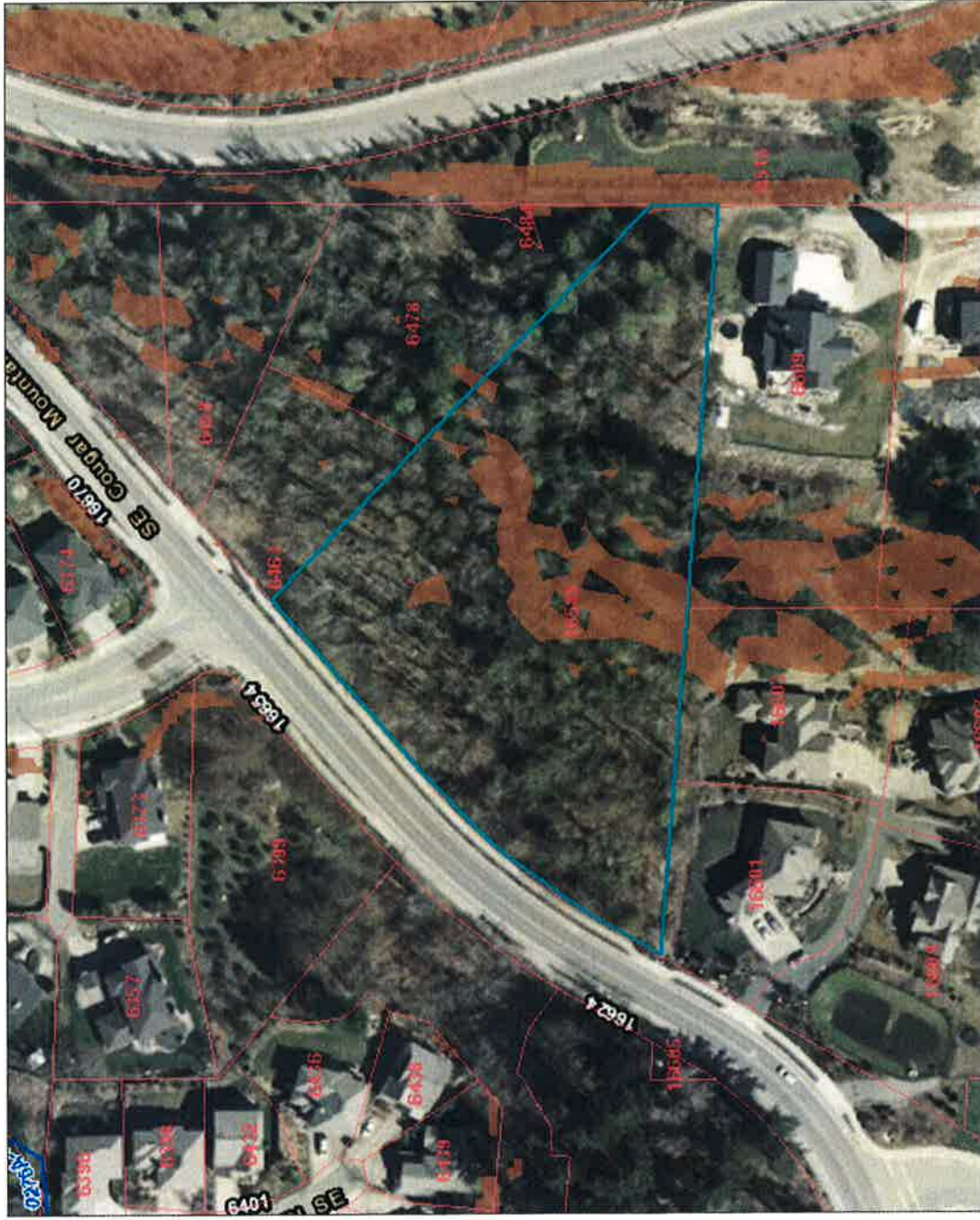
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

*Please determine if the wetland meets the attributes described below
and circle the appropriate answers and Category.*

Wetland Type – Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.		
SC1	<p>Estuarine wetlands? (see p.86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p>___ The dominant water regime is tidal,</p> <p>___ Vegetated, and</p> <p>___ With a salinity greater than 0.5 ppt.</p> <p>YES = Go to SC 1.1 NO =</p>	
	<p>SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2</p>	<p>Cat. 1 N/A</p>
	<p>SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?</p> <p>YES = Category I NO = Category II</p> <p>___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p>___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland</p> <p>___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>	<p>Cat. I Cat. II Dual Rating I/II N/A</p>
SC2	<p>Natural Heritage Wetlands (see p. 87)</p> <p>Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? (This question is used to screen out most sites before you need to contact WNHP/DNR.)</p> <p>S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___</p> <p>YES ___ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ___</p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?</p> <p>YES = Category 1 NO ___ not a Heritage Wetland</p>	<p>N/A Cat I N/A</p>
SC3	<p>Bogs (see p. 87)</p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <ol style="list-style-type: none"> Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? <p>YES = Is a bog for purpose of rating NO = go to question 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <ol style="list-style-type: none"> Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? <p>YES = Category I NO = Is not a bog for purpose of rating</p>	<p>Cat. I N/A</p>

SC4	<p>Forested Wetlands (see p. 90)</p> <p>Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its function.</i></p> <p>— Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).</p> <p>NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <p>— Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p>YES = Category I NO = _____ not a forested wetland with special characteristics</p>	Cat. I N/A
SC5	<p>Wetlands in Coastal Lagoons (see p. 91)</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p>— The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks.</p> <p>— The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom.</i>)</p> <p>YES = Go to SC 5.1 NO _____ not a wetland in a coastal lagoon</p> <p>SC 5.1 Does the wetland meet all of the following three conditions?</p> <p>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).</p> <p>— At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p>— The wetland is larger than 1/10 acre (4350 square ft.)</p> <p>YES = Category I NO = Category II</p>	Cat. I Cat. II N/A
SC6	<p>Interdunal Wetlands (see p. 93)</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?</p> <p>YES = Go to SC 6.1 NO _____ not an interdunal wetland for rating</p> <p><i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis -- lands west of SR 115 and SR 109 <p>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?</p> <p>YES = Category II NO = go to SC 6.2</p> <p>SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?</p> <p>YES = Category III</p>	Cat. II Cat. III N/A
◆	<p>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</p> <p>If you answered NO for all types enter "Not Applicable" on p. 1</p>	N/A

Comments:

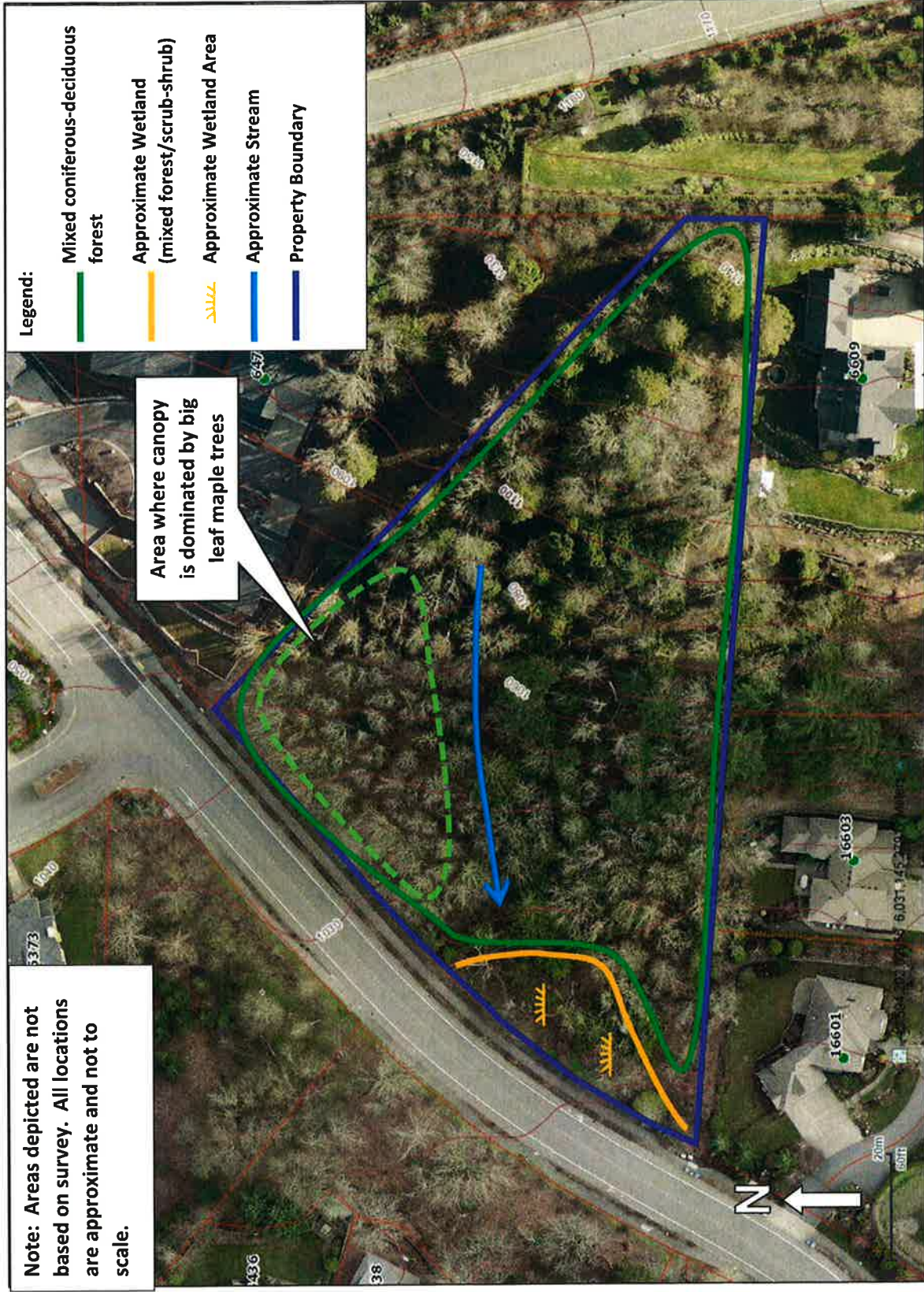


-  Nearby Search Area (.25mi)
-  Search Result Location
-  City Limit
-  Stream
-  Parcel
-  Floodplain
-  100 Year
-  Other
-  Water Body
-  Fish and Wildlife Habitat Area
-  Wetland
-  Wetland Buffer
-  Stream Buffer
-  Landslide Area
-  Floodway
-  Steep Slope
-  Shoreline Jurisdiction Area

Disclaimer: The eCityGov Alliance or its member agencies do not guarantee that the information on this map is accurate or complete. This map is provided for information purposes only.

APPENDIX C

Habitat Assessment Documents



Habitat Sketch
 Parcel #2524059192, Bellevue, WA
 Prepared for Vadim Scherbinin
 September 20, 2016
 TWC Project #160652

City of Bellevue
DRAFT FUNCTIONAL ASSESSMENT TOOL
for Upland Habitat

Property address: Cougar Mountain Way between 166th Way SE and 167th Ave SE, Bellevue, WA Project name: Cougar Ridge Estate, Bellevue, WA

Location: Range 05E Township 24N Section 25

Project contact: Vadim Scherbinin

Parcel number: 2524059192

Telephone number () -

Property owner: Apex Elite Homes

Address 1 Lake Bellevue Drive, Suite 111, Bellevue, WA 98005

Telephone number () -

Staff: I. Palmer

Date(s) of site visit(s): 9/20/16

TWC Reference Number: 160652

Washington Department of Fish and Wildlife Priority Habitat and Species (PHS) data obtained? Y/N: Y

1.0	PROPERTY DESIGNATION	Zone A	Zone B	Zone C	Zone D		Zone
1.1	Existing impervious surface	>90%	50-90%	20-50%	0-20%		D
2.0	LANDSCAPE PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
2.1	Land use/development density	Zone A	Zone B	Zone C	Zone D		3
2.2	*Occurrence (number) of habitat types	0	1	2	3+		3
2.3	**Proximity of known critical areas (distance to edge)	>2,500 ft	<2,500 ft	<1,200 ft	<100 ft	+1 point if contiguous with critical area	4
2.4	Habitat connectivity and corridors	No connection to other habitat areas	≥50-foot-wide connection to vegetated areas of at least 1 acre	≥50-foot-wide connection to vegetated areas of at least 50 acres but not listed parks***	≥50-foot-wide connection King County wildlife network or listed parks***	+1 point for ≥150-foot-wide connection King County wildlife network or listed parks***	1
2.5	Patch size	<0.-1.0 ac	1.0-5.0 ac	>5.-10 ac	10-42 acres	>42 acres = 4 points	3

City of Bellevue
DRAFT FUNCTIONAL ASSESSMENT TOOL
for upland habitat

2.0	LANDSCAPE PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
2.6	*Interspersion of habitat patches (excluding patches <1 ac in area)	No or isolated patch (no others within 0.5-ac circle)	Low	Moderate	High	+1 point if wildlife network or listed park is included	2
3.0	LOCAL PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
3.1	Size of native trees on site	No significant trees on site	6-12" dbh tree(s) present	12-20" dbh tree(s) present	>20" dbh tree(s) present	+1 point if tree(s) >30" dbh are present	4
3.2	Coniferous component	No conifers on site	Conifers very sparse or present in understory only	Conifers co- or sub-dominant in overstory	Conifers dominant	+1 point if conifers >30" dbh are present	3
3.3	Percent cover (sample vegetated areas only)						
	Ground layer (0-2.3 ft) (5-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%; -1 point if mowed grass is >50%	3 ¹
	Shrub layer (2.3-25 ft) (10-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%	2 ¹
	Canopy (>25 ft) (30-ft radius)	0%	0-25%	25-50%	50%+	+1 point for cover >75%	4 ¹
3.4	Vegetative vertical structural diversity (foliage height diversity)	FHD = 0	FHD < 0.70	FHD = 0.70-0.90	FHD > 0.90		3 ¹
3.5	Vegetative species richness	0-1 species	2-5 species	6-19 species	20+ species		3
3.6	Invasive species component	>75% cover	25-75% cover	10-25% cover	<10% cover		3

City of Bellevue
DRAFT FUNCTIONAL ASSESSMENT TOOL
for Upland Habitat

3.0	LOCAL PARAMETERS	No points	1 point	2 points	3 points	Additional points	Total
3.7	Proximity to year-round water	>1.0 mi or artificial feature with maintained /invasive buffer present within 0.3-1 mi	0.3-1.0 mi or artificial feature with maintained/ invasive buffer present within <0.3 mi	<0.3 mi or artificial feature with maintained/ invasive buffer present within patch	Natural water feature present within patch with native buffer		3
3.8	Snags (24 in dbh)	No snags on site	1/ac or fewer	2-6/ac	>7/ac	Add 0.5 point for each >20 in dbh and 1 point for each >30 in dbh	6 ²
3.9	Other habitat features	None	1	2-4	5 or more		3
Landscape parameters points							
Local parameters points							
TOTAL POINTS							
							53
							37
							16

* Use circle of the appropriate size for the property's zone:

- Zone A – 0.5 ac
- Zone B – 5.0 ac
- Zone C – 100 ac
- Zone D – 250 ac

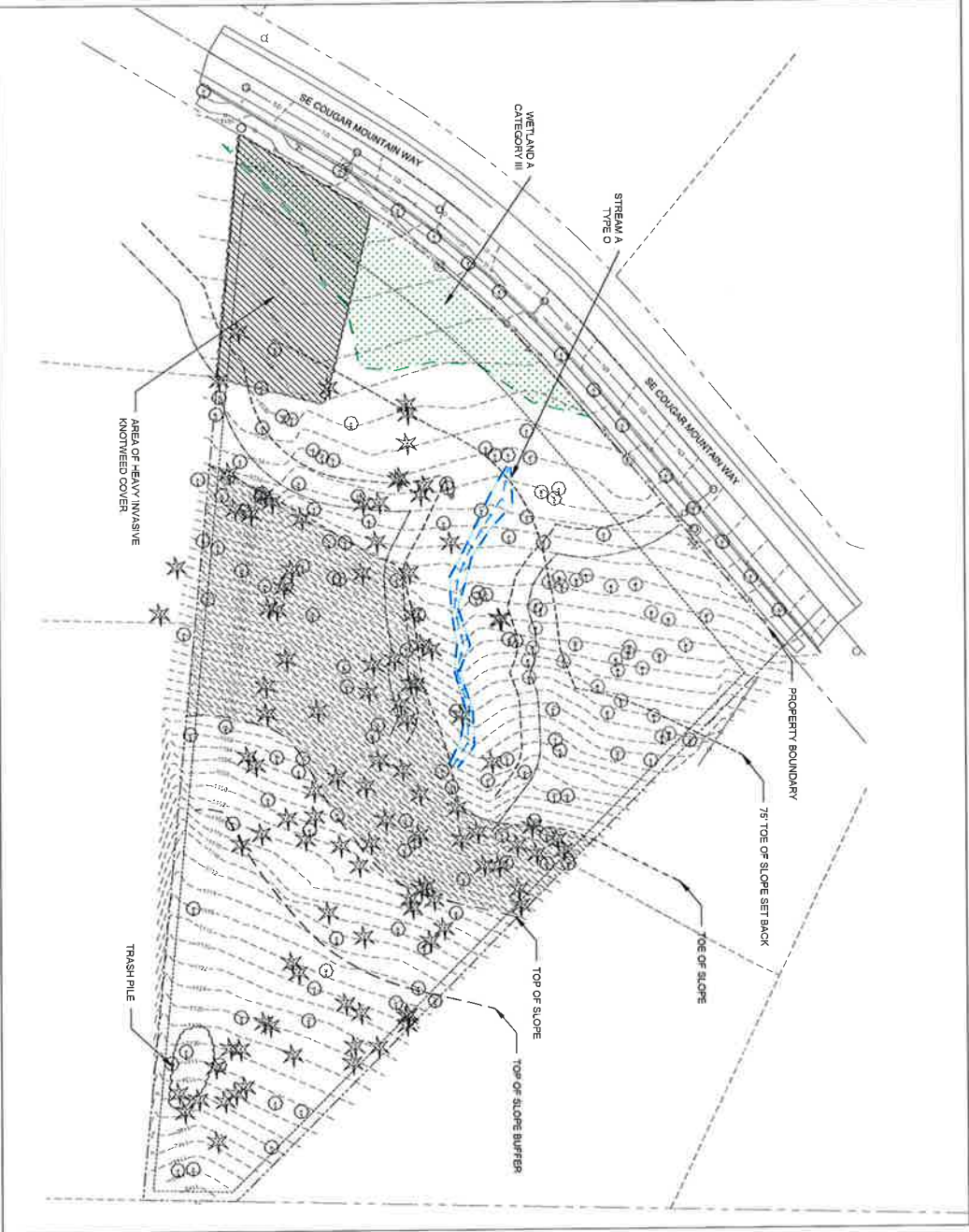
** PHS data required for sites in Zone D

***Parks: Mercer Slough, Phanton Lake wetland complex, Larson Lake wetland complex, Cougar Mountain Regional Wildland Park, Weowna Park; King County wildlife network

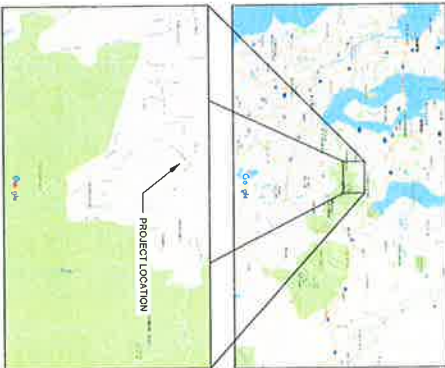
¹Vegetation assessed across the site and averaged to determine these scores.

²Approximately four snags with DBH >20 and one snag with DBH >30.

COUGAR RIDGE ESTATE



EXISTING SITE CONDITIONS



VICINITY MAPS

SHEET INDEX

- W1 EXISTING SITE CONDITIONS
- W2 IMPACT ASSESSMENT AND MITIGATION PLAN
- W3 INVASIVE SPECIES MANAGEMENT PLAN
- W4 REVEGETATION PLAN
- W5 RESTORATION PLAN
- W6 PLANT INSTALLATION SPECIFICATIONS AND DETAILS
- W7 MITIGATION PLAN NOTES AND DETAILS

NOTES

1. CRITICAL AREAS DELINEATED BY THE WATERSHED COMPANY IN JULY AND SEPTEMBER OF 2016.
2. SURVEY RECEIVED FROM APEX ELITE HOMES.
3. CRITICAL SLOPE AREA DESIGNATED BY LAND SURVEYORS & ENGINEERS.

LEGEND

- DELINEATED WETLAND BOUNDARY
- DELINEATED STREAM CHAIN
- WETLAND AND STREAM BUFFER 88BL
- WETLAND AND STREAM BUFFER 88BL
- TOP OF SLOPE
- TOP OF SLOPE BUFFER
- TOP OF SLOPE SETBACK
- PROPERTY BOUNDARY

PERMIT SET
NOT FOR
CONTRACTOR
BIDDING

COUGAR RIDGE ESTATE

MITIGATION PLAN
PREPARED FOR VADIM SCHERBININ
APEX ELITE HOMES
16603 SE COUGAR MOUNTAIN WAY
BELLEVUE, WA 98006



750 Sixth Street South
Kirkland, WA 98033
P 206.835.5542
www.watershed.com
Science & Design

SUBMITTALS & REVISIONS				BY
NO	DATE	DESCRIPTION	REVIEW SET	KMB
1	10-04-2016	REVIEW SET		

SHEET SIZE:
ORIGINAL PLAN IS 27" x 34"
SCALE: AS SHOWN
PROJECT MANAGER: KMB
DESIGNED: KMB
CHECKED: KMB
JOB NUMBER: 160652
SHEET NUMBER: W1 OF 7

IMPACTS ASSESSMENT AND MITIGATION PLAN



NOTES
 1. STREAM SETBACK IMPACTS AND GEOLOGICAL HAZARD SETBACK IMPACT OVERLAP

- LEGEND**
- EXISTING FEATURES**
- DELINEATED WETLAND BOUNDARY
 - DELINEATED STREAM CHANNEL
 - WETLAND AND STREAM BUFFER 99.9L
 - WETLAND AND STREAM BUFFER 99.9L
 - TOP OF SLOPE
 - TOE OF SLOPE
 - TOE OF SLOPE SETBACK
 - TOP OF SLOPE BUFFER
 - PROPERTY BOUNDARY SETBACK
 - PROPERTY BOUNDARY
- PROPOSED FEATURES**
- MAXIMUM LIMITS OF GRADING
 - WETLAND SETBACK IMPACTS (119 SF)
 - STREAM SETBACK IMPACTS (88 SF)
 - GEOLOGICAL HAZARD SETBACK IMPACTS (1,130 SF)
 - PROPOSED MITIGATION AREA (7,800 SF)
 - TREES TO BE REMOVED (30)

PERMIT SET
 NOT FOR CONTRACTOR BIDDING

SUBMITTALS & REVISIONS				BY
NO	DATE	DESCRIPTION	REVIEW SET	KMB
1	10-04-2018	REVIEW SET		

COUGAR RIDGE ESTATE
MITIGATION PLAN
 PREPARED FOR VADIM SCHERBININ
 APEX ELITE HOMES
 16603 SE COUGAR MOUNTAIN WAY
 BELLEVUE, WA 98006

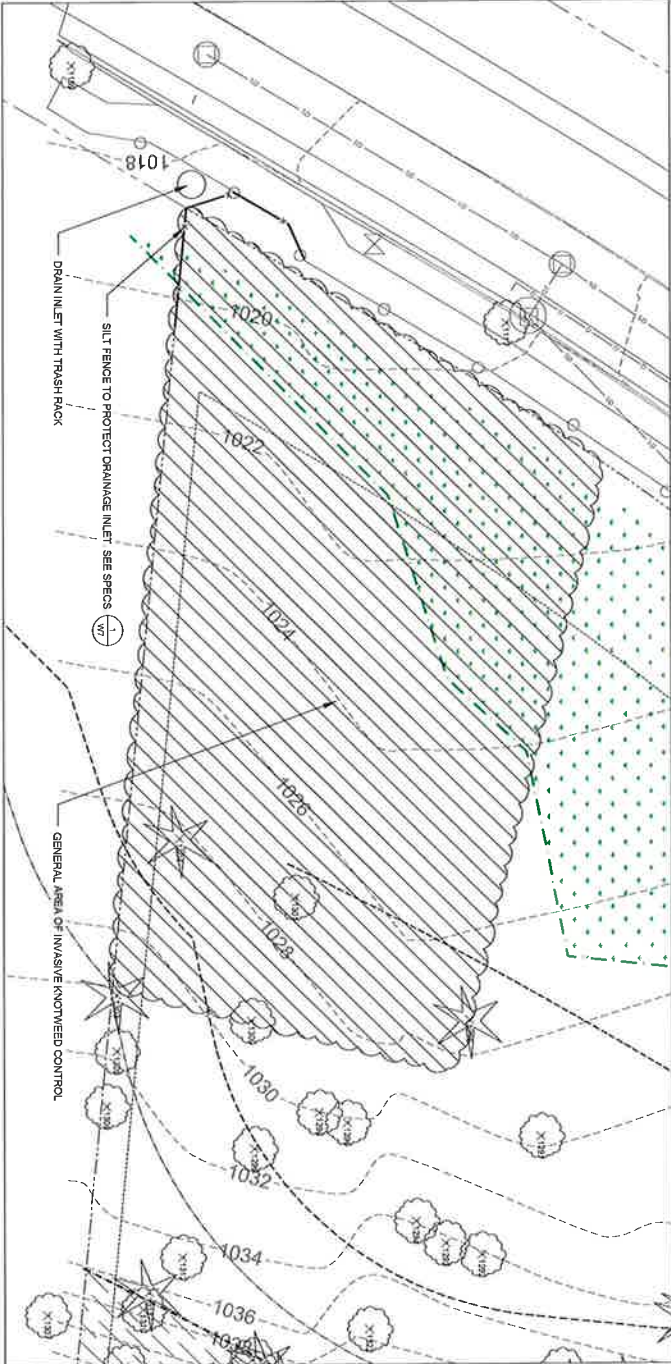
THE WATERSHED COMPANY
 7150 South Street South
 Kirkland WA 98033
 P: 425.822.5342
 www.watershedco.com
Science & Design

KNOTWEED REMOVAL PLAN

- THESE HERBICIDE CONTROL METHODS WERE DEVELOPED USING INFORMATION FROM KING COUNTY'S KNOTWEED CONTROL BMS AND CITY OF BELLEVUE PARKS HERBICIDE USE PRACTICES. USE OF MAZAPRIN A LOW TOXICITY HERBICIDE, IS RECOMMENDED TO CONTROL KNOTWEED SINCE CUTTING AND DIGGING OF ROOTS HAS PROVEN INEFFECTIVE. ESPECIALLY FOR LARGE PATCHES AND IN A CRITICAL AREA SETTING WHERE NATIVE PLANTS ARE ALSO PRESENT.
1. STATE OUT JAPANESE KNOTWEED CONTROL AREA AND VERIFY WITH RESTORATION SPECIALIST
 2. AT THE BEGINNING OF JUNE CUT STEMS CLOSE TO THE GROUND USING A MACHETE, LOPPERS OR PRUNING SHEARS. BE SURE NOT TO SCATTER STEMS OR ROOT FRAGMENTS
 3. RAKE AND PILE UP THE CUT STEMS ON A TAPE OR A SURFACE WHERE THEY WILL DRY OUT. DRIED STEMS CAN BE CRUSHED AND COMPOSTED ON SITE OR DISPOSED OF IN A LICENSED DISPOSAL SITE
 4. BE SURE THAT ALL PIECES OF STEMS AND CUT KNOTWEED ARE DISPOSED OF PROPERLY TO PREVENT RE-INFESTATION
 5. ONCE STEMS HAVE BEEN CUT DOWN TO THE GROUND WAIT SIX (6) WEEKS FOR STEMS TO REGROW TO APPROXIMATELY 3'6" ABOVE THE GROUND
 6. CUT ANY FLOWERS THAT HAVE APPEARED IN THE SHORT GROW BACK PERIOD TO PREVENT POLLINATORS FROM BEING AFFECTED BY THE HERBICIDES
 7. HERBICIDE APPLICATIONS SHOULD BE DONE IN JULY TO SEPTEMBER FOR MAXIMUM EFFICIENCY. SO PLAN CUTTING ACCORDINGLY TO ALLOW SUFFICIENT TIME FOR RESPROUTING. HERBICIDE APPLICATIONS SHOULD BE CONDUCTED ONLY BY STATE LICENSED APPLICATORS
 8. FOLLOWING ALL LABEL DIRECTIONS APPLY THE MANUFACTURER RECOMMENDED AMOUNT OF MAZAPRIN BY THE DILUBING OR PAINTING METHOD TO NEARLY THE REGIONAL STEMS OF THE KNOTWEED
 9. MONITOR KNOTWEED INFESTATION AND REPEAT AS NEW STEMS BEGIN TO COME BACK ONE MORE TIME BEFORE THE FIRST FROST
 10. REPEAT THIS PROCEDURE IN SUBSEQUENT GROWING SEASONS UNTIL RESPROUTING HAS STOPPED AND KNOTWEED IS NO LONGER PRESENT IN THE WEED REMOVAL AREA



KNOTWEED LEAVES AND FLOWERS



INVASIVE SPECIES MANAGEMENT PLAN

- LEGEND**
- DELINEATED WETLAND BOUNDARY
 - DELINEATED STREAM CORN
 - COMBINED WETLAND AND STREAM BUFFER
 - WETLAND AND STREAM BUFFER BSL
 - TOE OF SLOPE
 - TOE OF SLOPE SETBACK
 - PROPERTY BOUNDARY
 - SILT FENCE (SHEET W1, DETAIL 1)

NOTES

1. DUE TO THE VARIOUS TESTED KNOTWEED REMOVAL METHODS, THE FOLLOWING METHODS WILL BE USED TO QUANTIFY TOTAL ERADICATION OF THE INVASIVE KNOTWEED INFESTATION

PERMIT SET
NOT FOR
CONTRACTOR
BIDDING

Copyright © 2016 WATERSHED COMPANY

NO.	DATE	DESCRIPTION	BY
1	10/04/2016	REVIEW SET	KMB

SHEET SIZE:
ORIGINAL PLAN 32" x 42"
SCALE ACCORDINGLY

PROJECT MANAGER: KMB
DESIGNED: KMB
CHECKED: KMB
JOB NUMBER: 160652
SHEET NUMBER: W3 OF 7

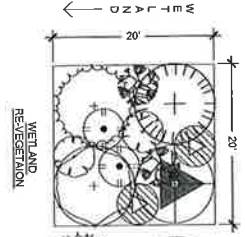
DATE: 10/04/2016
PRINTED BY: 10/04/2016

COUGAR RIDGE ESTATE
MITIGATION PLAN
PREPARED FOR VADIM SCHERBININ
APEX ELITE HOMES
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THE WATERSHED COMPANY
750 5th Street South
Kirkland, WA 98033
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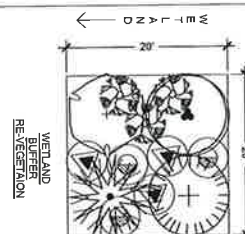
WETLAND RE-VEGETATION PLANTING SCHEDULE AND TYPICAL

TREES / MINIMUM SPACING @ 10'x10' O.C.	QTY	SIZE
SAULX LAMANDRA / PACIFIC WILLOW	6	2 GAL.
FRAXINUS LATTOLIA / OREGON ASH	6	2 GAL.
THALIA PULCATA / WESTERN RED CEDAR	6	2 GAL.
PICEA SITCHENSIS / SITKA SPRUCE	8	2 GAL.
SHRUBS / MINIMUM SPACING @ 5'x7' O.C.		
RIBES LACUSTRE / BLACK GOOSEBERRY	12	1 GAL.
CORNUS SERICEA / RED DOGIE / RED TWIN DOGWOOD	12	1 GAL.
RUBUS SPECTABILIS / SALMONBERRY	12	1 GAL.
LONICERA INVOLUCRATA / BLACK TWIMBERRY	12	1 GAL.

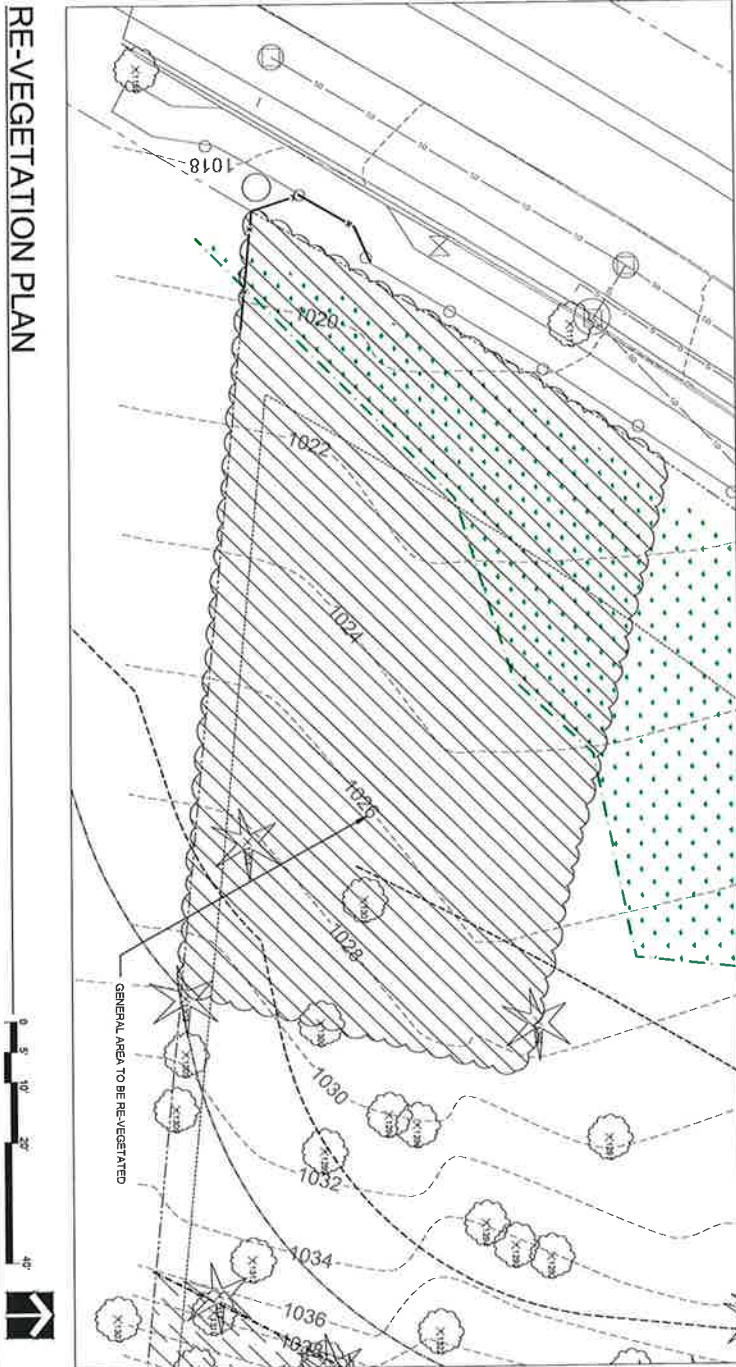


WETLAND BUFFER RE-VEGETATION PLANTING SCHEDULE AND TYPICAL

TREES / MINIMUM SPACING @ 10'x10' O.C.	QTY	SIZE
PSUEDOTSUGA MENZIESII / DOUGLAS FIR	15	2 GAL.
ALNUS RUBRA / RED ALDER	15	2 GAL.
THALIA PULCATA / WESTERN RED CEDAR	15	2 GAL.
ACER MACROPHYLLUM / BIG LEAF MAPLE	15	2 GAL.
SHRUBS / MINIMUM SPACING @ 5'x7' O.C.		
CORYLUS CORNUTA / BEAKED HAZELNUT	45	1 GAL.
CEMELERIA CERASIFORMIS / OSO BERRY	45	1 GAL.
RUBUS SPECTABILIS / SALMONBERRY	45	1 GAL.
GROUND COVER / MINIMUM SPACING @ 2'x2' O.C.		
POLYSTICHUM MUNITUM / SWORD FERN	300	4" INCH POT



RE-VEGETATION PLAN



LEGEND

- DELINEATED WETLAND BOUNDARY
- DELINEATED STREAM AND STREAM BUFFER
- WETLAND AND STREAM BUFFER BSL
- TOP OF SLOPE
- TOP OF SLOPE
- ZZZZ CRITICAL SCOPE AREA
- ZZZZ CRITICAL SCOPE AREA
- PROPERTY BOUNDARY SETBACK
- PROPERTY BOUNDARY

PERMIT SET
NOT FOR
CONTRACTOR
BIDDING

PROJECT NUMBER: 160652
JOB NUMBER: W4
SHEET NUMBER: OF 7

NO.	DATE	DESCRIPTION	BY
1	10-01-2010	REVIEW SET	KMB

COUGAR RIDGE ESTATE
MITIGATION PLAN
PREPARED FOR VADIM SCHERBININ
APEX ELITE HOMES
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BELLEVUE, WA 98006

THE
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COMPANY
750 Sixth Street South
Kirkland WA 98033
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QTY	SIZE
16	1 GAL
16	1 GAL
16	1 GAL
32	1 GAL
32	1 GAL
32	1 GAL
32	1 GAL



SETBACK IMPACTS RESTORATION PLAN



EXISTING FEATURES

- DELINEATED WETLAND BOUNDARY
- DELINEATED STREAM OHWM
- COMBINED WETLAND AND STREAM BUFFER
- WETLAND AND STREAM BUFFER BSBL
- TOE OF SLOPE
- TOP OF SLOPE
- AGRICULTURAL SLOPE AREA
- TOE OF SLOPE SETBACK
- TOP OF SLOPE BUFFER
- PROPERTY BOUNDARY SETBACK
- PROPERTY BOUNDARY

PROPOSED FEATURES

- MAXIMUM LIMITS OF GRADING
RESTORED SETBACK IMPACTS (1,184 SF)

PERMIT SE
NOT FOR
CONTRACTOR
BIDDING

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MITIGATION PLAN
PREPARED FOR VADIM SCHERBININ
APEX ELITE HOMES
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BELLEVUE, WA 98006



THE
WATERSHED
COMPANY

750 Sixth Street South
Kirkland WA 98033
p 425 822 5242
www.watershedco.com
Science & Design

[illegible]

SHEET SIZE:
ORIGINAL: PLAT 5'22" x 34"
SCALE: ACCORDINGLY

PROJECT MANAGER: KB
DESIGNED: KMB
DRAFTED: KMB
CHECKED: KB
JOB NUMBER:
160652

SHEET NUMBER:
W5 OF 7

DATE	PRINTED BY	FILE NAME
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PLANT INSTALLATION SPECIFICATIONS

GENERAL NOTES

QUALITY ASSURANCE

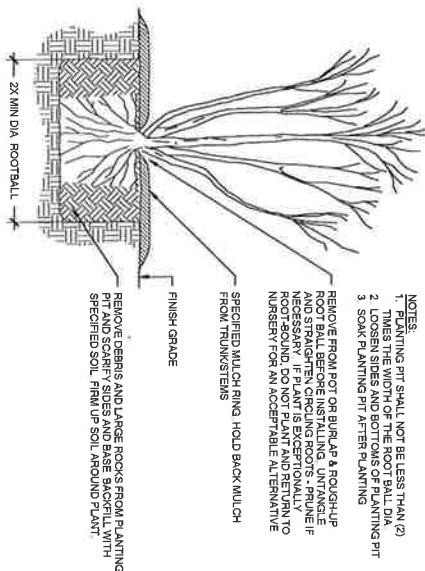
1. PLANTS SHALL MEET OR EXCEED THE SPECIFICATIONS OF FEDERAL, STATE, AND LOCAL LAWS.
2. PLANTS INSPECTED ON SITE AND REJECTED FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED IMMEDIATELY FROM SITE OR RE-ROOTED AND REPAIRED AS SOON AS POSSIBLE.
3. THE RESTORATION CONSULTANT SHALL ACCEPTANCE OF THE RESTORATION CONSULTANT MAY REQUIRE THE INSPECTED PLANTS BE LABELED AND RESERVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS WITH OTHER INDIVIDUALS, EVEN OF THE SAME SPECIES AND SIZE, IS UNACCEPTABLE.
4. MEASUREMENT OF PLANTS

1. HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR ROOT TIP TO TIP. PLANT DIMENSIONS SHALL BE MEASURED WHEN THE BRANCHES OR ROOTS ARE IN THE UPRIGHT POSITION. NO PLANT SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST 50% OF THE PLANTS SHALL BE AS LARGE AS THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE RANGE IS 12" TO 18", AT LEAST 50% OF PLANTS MUST BE 15" TALL.)

1. DEFINITIONS
2. PLANT MATERIALS
3. PLANTS AND PLANT MATERIALS SHALL INCLUDE ANY LIVE PLANT MATERIAL USED ON THE PROJECT. THIS INCLUDES BUT IS NOT LIMITED TO CONTAINER GROWN, BAB OR BAREROOT PLANTS, LIVE STAKES AND FASCINES (WHITTLES), TUBERS, CORNS, BILLS, ETC., SPRIGS, PLUGS, AND LINERS.
4. CONTAINER GROWN: CONTAINER GROWN PLANTS ARE THOSE WHOSE ROOTBALLS ARE ENCLOSED IN A POT OR BAG IN WHICH THAT PLANT GREW.

1. SUBSTITUTIONS
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SPECIFIED MATERIALS IN ADVANCE. IF SPECIAL GROWING, MARKETING OR OTHER ARRANGEMENTS MUST BE MADE IN ORDER TO SUPPLY SPECIFICATION OF PLANT MATERIALS NOT ON THE PROJECT LIST, IT WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE RESTORATION CONSULTANT.
3. IF PROOF IS SUBMITTED THAT ANY PLANT MATERIAL SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL BE CONSIDERED FOR USE OF THE NEAREST EQUIVALENT SIZE OR ALTERNATIVE SPECIES.
4. SUCH PROOF WILL BE SUBMITTED IN WRITING TO THE CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION.

1. INSPECTION
2. SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE RESTORATION CONSULTANT FOR CONFORMANCE TO SPECIFICATIONS, EITHER AT TIME OF DELIVERY ON-SITE OR AT THE GROWER'S NURSERY. APPROVAL OF PLANT MATERIALS AT ANY TIME SHALL NOT IMPAIR THE



PLANT INSTALLATION SPECIFICATIONS

SUBSEQUENT RIGHT OF INSPECTION AND REJECTION DURING PROGRESS OF THE WORK

1. PLANTS INSPECTED ON SITE AND REJECTED FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED IMMEDIATELY FROM SITE OR RE-ROOTED AND REPAIRED AS SOON AS POSSIBLE.
2. THE RESTORATION CONSULTANT SHALL ACCEPTANCE OF THE RESTORATION CONSULTANT MAY REQUIRE THE INSPECTED PLANTS BE LABELED AND RESERVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS WITH OTHER INDIVIDUALS, EVEN OF THE SAME SPECIES AND SIZE, IS UNACCEPTABLE.
3. MEASUREMENT OF PLANTS
4. HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR ROOT TIP TO TIP. PLANT DIMENSIONS SHALL BE MEASURED WHEN THE BRANCHES OR ROOTS ARE IN THE UPRIGHT POSITION. NO PLANT SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST 50% OF THE PLANTS SHALL BE AS LARGE AS THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE RANGE IS 12" TO 18", AT LEAST 50% OF PLANTS MUST BE 15" TALL.)

1. SUBMITTALS
2. PROPOSED PLANT SOURCES
3. WITHIN 45 DAYS AFTER AWARD OF THE CONTRACT, SUBMIT A COMPLETE LIST OF PLANT MATERIALS PROPOSED TO BE PROVIDED DEMONSTRATING CONFORMANCE WITH THE REQUIREMENTS SPECIFIED. INCLUDE THE NAMES AND ADDRESSES OF ALL GROWERS AND NURSERIES.

1. PRODUCT CERTIFICATES
2. PLANT MATERIALS LIST: SUBMIT DOCUMENTATION TO CONSULTANT AT LEAST 60 DAYS PRIOR TO START OF WORK. THE LIST SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED. HAVE COPIES OF VENDORS OR GROWERS INVOICES OR PACKING SLIPS FOR ALL PLANTS ON SITE DURING INSTALLATION. INVOICE OR PACKING SLIP SHOULD LIST SPECIES BY SCIENTIFIC NAME, QUANTITY, AND DATE DELIVERED (AND GENETIC ORIGIN IF THAT INFORMATION WAS PREVIOUSLY REQUESTED).
3. DELIVERY, HANDLING, & STORAGE

1. NOTIFICATION
2. MUST NOTIFY CONSULTANT 48 HOURS OR MORE IN ADVANCE OF DELIVERIES SO THAT CONSULTANT MAY ARRANGE FOR INSPECTION.

PLANT MATERIALS

1. TRANSPORTATION: DURING SHIPPING, PLANTS SHALL BE PACKED TO PROVIDE PROTECTION AGAINST CLIMATE EXTREMES, BRUISES, AND DAMAGE TO ROOT SYSTEMS AND PREVENTION SCHEDULING AND STORAGE. PLANTS SHALL BE DELIVERED AS CLOSE TO PLANTING AS POSSIBLE.
2. PLANTS IN STORAGE MUST BE PROTECTED AGAINST ANY CONDITION THAT IS DETRIMENTAL TO THEIR CONTINUED HEALTH AND VIGOR.
3. HANDLING: PLANTS MUST NOT BE HANDLED BY THE TRUNK, LIMBS, OR FOLIAGE BUT PLANTS SHALL BE KEPT IN BUNDLES UNTIL PLANTING AND THEN HANDLED CAREFULLY BY THE TRUNK OR STEM.
4. LABELS: PLANTS SHALL HAVE DURABLE, LEGIBLE LABELS STATING CORRECT SCIENTIFIC NAME AND SIZE. LABELS SHALL BE PLACED ON THE PLANT, NOT ON THE BUNDLES. BUNDLES SHALL HAVE ONE LABEL PER GROUP.

1. VARIETY
2. PLANTS MUST BE GUARANTEED TO BE TRUE TO SCIENTIFIC NAME AND SPECIFIED SIZE, AND TO BE HEALTHY AND CAPABLE OF VIGOROUS GROWTH.

1. REPLACEMENT
2. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
3. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

1. PLANT MATERIAL
2. GENERAL
3. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES WHEN THE PLANTS ARE DELIVERED TO THE PROJECT. PLANTS MUST NOT BE ROOT-BOUND, THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANTS INSPECTED.
4. ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.

1. QUANTITIES
2. SEE PLANT LIST ON ACCOMPANYING PLANS AND PLANT SCHEDULES.
3. ROOT TREATMENT
4. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANTS ARE REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ALLOWED TO REMAIN ON THE ROOTBALL.
5. PLANTS MUST NOT BE ROOT-BOUND, THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANTS INSPECTED.
6. ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.

PERMIT SET
NOT FOR
CONTRACTOR
BIDDING

PROJECT MANAGER: JAG
DESIGNED: JAG
CHECKED: JAG
JOB NUMBER: 160652
SHEET NUMBER: W6 OF 7

SUBMITTALS & REVISIONS			
NO.	DATE	DESCRIPTION	BY
1	10-04-2016	REVIEW SET	JMB

COUGAR RIDGE ESTATE
MITIGATION PLAN
PREPARED FOR VADIM SCHERBININ
APEX ELITE HOMES
16603 SE COUGAR MOUNTAIN WAY
BELLEVUE, WA 98006

THE
WATERSHED
COMPANY
750 Shaw Street South
Kent WA 98033
P 425 822 5242
www.watershedco.com
Science & Design



LEROY SURVEYORS & ENGINEERS, INC.

Surveying • Engineering • Geology • Septic Design • GPS • GIS Mapping

Apex Elite Homes
1 Lake Bellevue Drive, Suite 111
Bellevue, WA 98005

September 9, 2015

Attention: Mr. Vadim Scherbinin

Cougar Ridge Estate 2.35 Acres

Critical Slope Mitigation Report

Address **166XX Cougar Mtn Way
Bellevue, WA**

Parcel No. **2524059192**

LS & E Job No. **10254**

Evaluation Performed July 16, 2015

INTRODUCTION

It is the intent of this assessment to describe the surface and near surface soil conditions observed on the nearly 2.3 acre lot located on the east side of Cougar Mountain Way between 166th Way SE and 167 AV SE in Bellevue, WA. The parcel is situated on the east side of SE Cougar Mountain Way and consists of moderate to steep slopes rising to the east across the middle of the property. The triangular lot is approximately 400 lineal feet along SE Cougar Mountain Way and extends upslope to the east approximately 550 ft. The lot is 50 ft wide at the east property line.

This report is intended for the exclusive use of Apex Elite Homes, Mr. Vadim Scherbinin, their consultants and contractors for the intended purpose described. Site observations, research and exploration methods described in this evaluation represent the standard of practices for the industry. Sources of information cited are uniformly accepted resources when utilized in conjunction with field reconnaissance as confirmation. Our opinions are based on applying these standardized practices to characterize the local surficial geology and general conditions at the site.

LeRoy Surveyors and Engineers, Inc, (LS&E) visited the site on May 20th, 2015 to observe existing site conditions with regard to current ***City of Bellevue Chapter VII, Geologic Hazard Areas, 20.25H.120 Designation of Critical Area and Buffers***. LS&E conducted field explorations and mapping at the site on July 16, 2015. Site survey includes boundary, topography and the location of a possible seep and surface wetlands.

LS&E reviewed historical data through published geologic mapping prepared by Booth and Minard in 1992, historical and current aerial photography covering the project area and Lidar based mapping for the project area.

Based on our field observations and the definitions in the City's Geologic Hazard Areas ordinance the property meets the regulatory definition of a Landslide Hazard area as outlined by the City of Bellevue municipal code. The property contains slopes in excess of 15 percent and 10 feet in vertical height as well as slope with grades in excess of 40 percent and 10 feet in vertical height and more than 1,000 sf in area. We also observed near surface seepage emanating from near mid slope and near the center of the lot.

In our opinion, development of the property can be accomplished with negligible impact to the moderate slopes, control of surface water runoff and management of the surface soil and maintain stability of the native slopes. Capture and control of near surface ground water seepage will assist in site development and foundation planning.

SITE AND PROJECT DESCRIPTION

The property is currently an undeveloped, forested lot surrounded by single family residential development on and across the moderate to steep slopes which dominate the surface topography. The subject lot extends from SE Cougar Mountain Way on the west up slope to 168th Place SE on the east. Preliminary development plans indicate a single family residence in the northwest corner with access directly from SE Cougar Mtn. Way. Initial construction of a single family residential structure would be situated on the lower northwestern portion of the parcel adjacent to SE Cougar Mtn. Way.

The lot is currently covered with a mature growth of Fir, Cedar, hardwood trees, berry vines, small brush and alders. The vegetation coverage is open and traversing the lot on foot is not difficult.

Topographically, the land rises gently to the east from SE Cougar Mtn. Way with grades of 5 to 15 percent. The topography steepens to the east to 15 to 30 percent grades with localized areas of 30 to 40 percent. The grades then shallow near the top of the slope to 10 to 15 percent.

A small seep was described by the wetland biologist and located near the center of the property near mid-slope which drains to the southwest. This surface flow is restricted by SE Cougar Mtn. Way creating a small wet area in the southwest corner of the property.

Our exploration of this seep discovered the seep emanates from a broken 4 inch corrugated plastic pipe buried in the bottom of a swale which drains to the wetland. The 4 inch pipe extended out of a wood box. When the wood box was removed it revealed a larger opening on the north side of the box extending to north towards the water line easement. It appears the system is a drain for the water line trench which extends down slope along the north property line and turns to the north just upslope.

New home development would be situated outside of regulatory buffers and setbacks from the wetlands. The small seep has been classified as a Type O stream but is emanating from a broken plastic pipe.

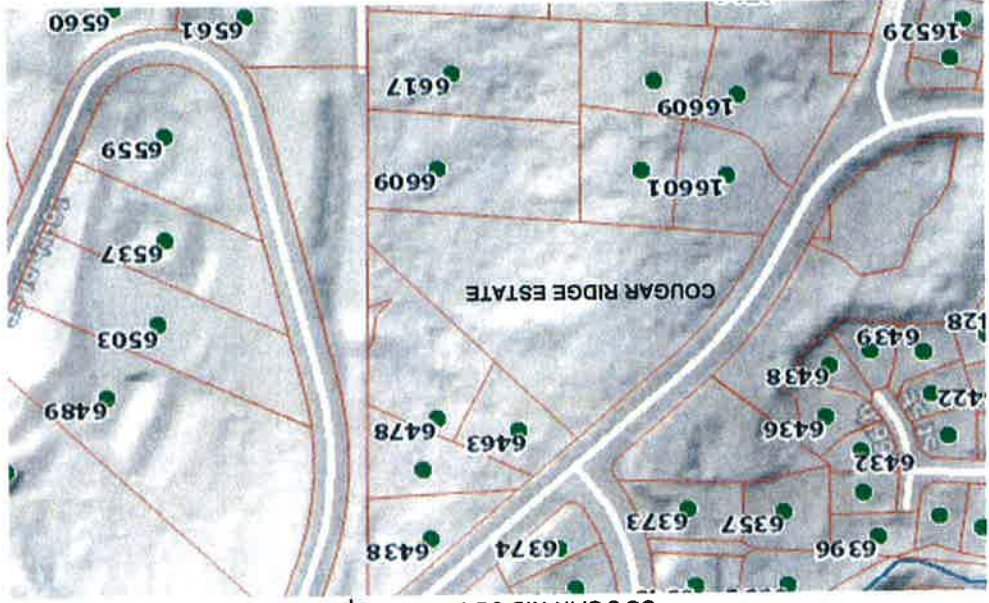
SITE ASSESSMENT METHODS

We observed surface and subsurface conditions at the project site on July 16, 2015. Our review of the property included the following elements:

- Review documents provided by the owner, architect and engineer related to house location and access to the property.
- A site visit to observe existing site conditions as they relate to the City of Bellevue Critical Areas ordinance

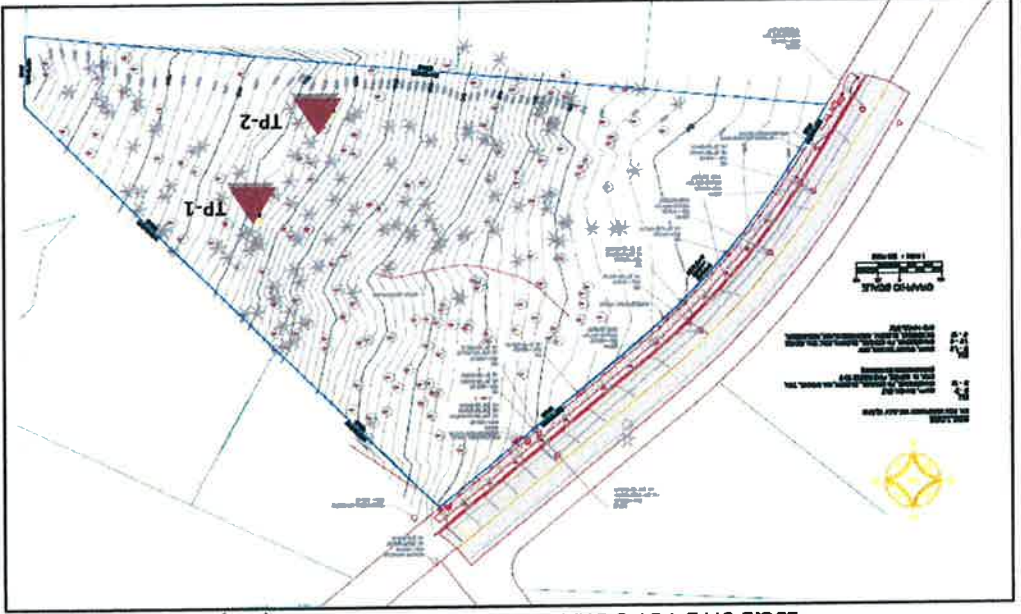
- A review of published geologic mapping, historic geology, King County, City of Bellevue and available public literature.

Public information related to the single family residential development and surrounding area included topographic coverage, shaded lidar and aerial photography and geologic mapping. Excerpts from each of the information resources are provided below;



COUGAR RIDGE LIDAR Map

King County lmap View Excerpt. (NTS)



LS&E SITE TOPOGRAPHY and EXPLORATIONS (nts)

EXPLORATIONS CONDUCTED ON 7/16/2015

SITE SOILS

The Natural Resource Conservation Service, NRCS, describe the soils across the property as being dominated by the Alderwood AgC and Beausite Bed. These gravely sandy loam soils are generally described on slopes with grades of 6 to 70 percent.

NRCS Soil Mapping (Excerpt)



Map Unit Legend

King County Area, Washington (WA633)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AgC	Alderwood gravely sandy loam, 8 to 15 percent slopes	13.9	63.5%
Bed	Beausite gravely sandy loam, 15 to 30 percent slopes	8.0	36.5%
Totals for Area of Interest		21.8	100.0%

Alderwood Gravely Sandy Loam (AgC)

The Alderwood gravely sandy loam is moderately well drained. It formed in glacial till on broad uplands. It is extensive in the Lake Tapps area. Predominant native vegetation is made up of hardwoods and conifers. The typical elevation of this soil series ranges from 200 to 800 feet. In a typical soil profile, a mat of undecomposed needles and wood fragments rests upon a 1 ½ inch thick very dark grayish brown gravely sandy loam surface layer. The subsoil and the upper part of the substratum, to a depth of 38 inches, are dark yellowish brown, brown, and dark grayish brown gravely sandy loam. The lower part of the substratum, to a depth of more than 60 inches, is weakly cemented compact glacial till. A seasonal water table is perched above the very slowly permeable, weakly cemented and compact part of the substratum during periods of heavy rainfall. However, the perched water table is of short duration because the water flows laterally above this layer to seeps at the bottom of slopes. Very few roots penetrate this dense substratum. The available water capacity is low. Surface runoff is medium, and the erosion hazard is moderate.

Beausite Gravely Sandy Loam (Bed)

The Beausite series is made up of well-drained soils that are underlain by sandstone at a depth of 20 to 40 inches. These soils formed in glacial deposits. They are rolling to very steep. Slopes are 6 to 75 percent. The vegetation is alder, fir, cedar and associated brush and shrubs. In a representative profile, the surface layer and the upper part of the subsoil are dark-brown to dark yellowish-brown gravely sandy loam that extends to a depth of about 19 inches. The lower part of the subsoil is olive-brown very gravely sandy loam. Fractured sandstone is at a depth of about 38 inches. Beausite soils are used for timber and pasture. Some areas have been used for urban development.

Roots penetrate easily to bedrock and enter a few cracks in the bedrock. Permeability is moderately rapid. Available water capacity is low. Runoff is medium, and the hazard of erosion is moderate.

SITE GEOLOGY

The east-central Puget Lowland is underlain by Eocene to Miocene volcanic and sedimentary rocks (Yount and Gower, 1991; Tabor and others, 2000), warped into a series of northwest-trending folds. In the Issaquah area, these Tertiary rocks are exposed in the upland areas south and southwest of the Issaquah and Lake Sammamish. Younger glacial deposits have been deposited onto both limbs of this the largest of the folds referred to as the Newcastle Hills anticline described by Weaver (1916). This anticline is a folded bedrock high which extends to the northwest from the front of the Cascade Range (Mullineaux, 1970) towards the center of the Puget Lowland.

Rocks exposed in the core of the Newcastle Hills anticline are assigned to the Puget Group, first named by White (1888). The Puget Group was later revised to include the lower assemblage of volcanic sedimentary rocks.

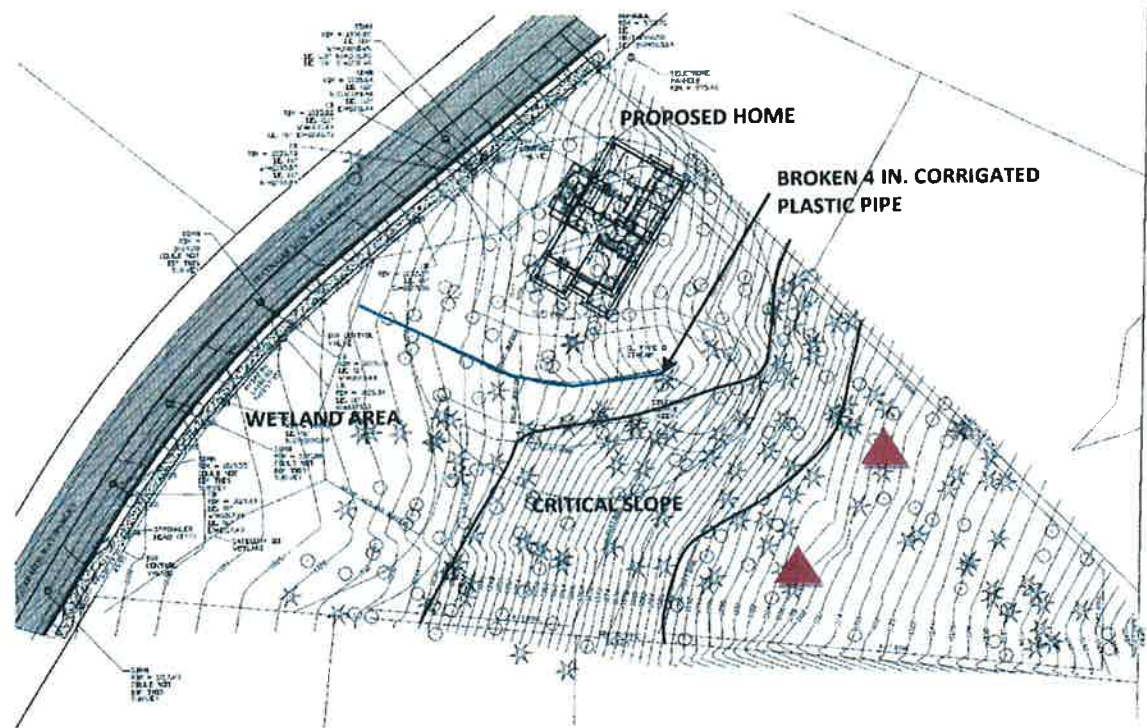
Overlying the Puget Group, exposures of the Blakeley Formation (Tb) (Weaver, 1912) overlook the south end of Lake Sammamish. The Blakeley Formation consists primarily of medium-grained sandstone that contains local marine fossils that yield a Zemorrian (middle to late Oligocene) age (Walsh 1984); Bedding is roughly conformable with the underlying Puget Group.

A geological map of the Newcastle area. The map shows various soil types labeled with codes: Qvt (light blue), Qvr (orange), Qoal (yellow), Qvi (light brown), Qv (dark brown), and Tpr (dark red). A large area in the center is hatched with red diagonal lines and labeled 'SITE'. A road labeled 'Victoria Blvd SE' runs diagonally across the map. Other labels include 'e Way' and 'Newcastle' at the bottom left.

Deposits of Fraser Glaciation (Pleistocene)		Older Glacial and Nonglacial Deposits (Pleistocene)		Bedrock	
Qf - Fan deposits	Qvi - Vashon subglacial silt	Qpf - Pre-Fraser deposits, undifferentiated	Tsc - Tertiary sedimentary rocks		
Qal - Alluvium	Qvm - Vashon subglacial meltout till	Qpfc - Pre-Fraser coarse-grained deposits	Thb - Hammer Bluff Formation		
Qoa - Older alluvium	Qvu - Vashon deposits, undifferentiated	Qpff - Pre-Fraser fine-grained deposits	Tb - Blakeley Formation		
Qom - Osceola mudflow	Qva - Vashon advance outwash	Qpfn - Pre-Fraser nonglacial deposits	Tv - Tertiary volcanic rocks		
	Qvic - Lawton Clay	Qpho - Pre-Fraser coarse-grained nonglacial deposits	Ti - intrusive rocks		
		Qpnt - Pre-Fraser fine-grained nonglacial deposits	Tpr - Renton Formation		
		Qob - Olympia beds	Tpt - Tukwila Formation		
			Tpm - Tiger Mountain Formation		
			Tp - Puget Group, undivided		
			Tu - Tertiary rocks, undifferentiated		
			K - Cretaceous rocks, undifferentiated		

Based on our field observations and geotechnical explorations along with our review of the City of Bellevue requirements for residential development, we offer the following recommendations.

Preliminary Site Development Plans (nts)



Topography and Survey by LS&E (2015)

Soils

Soil test pits were completed by LS&E confirmed geologic mapping and clarified the contact between NRCS soil groups. Bedrock of siltstone and sandstone associated with the Blakeley Formation was described at a depth of 2 feet. The highly weathered siltstone and sandstone is loose at the surface and becomes denser with depth. The rock is highly fractured and exhibited significant chemical and mechanical exfoliation.

The siltstone and fine sandstone formation was mapped by Booth and Minard and described in test pits by LS&E to depths of 10 feet. The Blakeley formation consists of moderately weathered, very weak to weak siltstone and fine sandstone. Our test pits encountered approximately 2 feet of weathered colluvium and highly fractured and weathered siltstone overlying the Blakeley fm.

No ground water was observed in soil pits at the time of our field explorations (7/16/2015). A small seep was observed and mapped by H&S Consulting and LS&E in the lower portion of the property near the center of the lot. This seep was discovered to be from a broken plastic pipe. A shallow, vegetated drainage channel has developed extending down slope to the west. The drainage from the broken pipe is collected in the southwest portion of the lot where the flow is restricted by SE Cougar Mountain Way.

Based on the weathering and mottling observed in the siltstone and sandstone, footing and foundation drains are recommended due to the potential for groundwater migration through the jointed bedrock.

Surface Storm Water Runoff and Erosion Control

Development of the residential lot will require interception and diversion of surface runoff and near surface ground water away from the structural foundation.

We recommend the small seep observed on the moderate to steep slope be armored, captured and diverted to the existing wetlands. The origin of the seep is not known. The normal flow does not appear to be significant with minimal scouring of the channel bottom.

Any removal of dangerous or dead trees from the slope adjacent to the home should be repaired and replanted with native deep rooting vegetation requiring minimal maintenance.

Landslide Hazard Assessment

On July 16, 2015, we examined the site for the presence of indicators associated with landforms susceptible or undergoing mass movement due to a combination of geologic, seismic, topographic, hydrologic, or manmade factors. Bellevue defines a landslide hazard area as having slopes of 15 percent or more with more than 10 feet of rise, and display any of the characteristics listed below:

1. Areas of historic failures, including those areas designated as quaternary slumps, earthflows, mudflows, or landslides.
2. Areas that have shown movement during the Holocene Epoch (past 13,500 yrs.) or that are underlain by landslide deposits...
3. Slopes parallel or sub-parallel to planes of weakness, such as bedding planes, joint systems, and fault planes in subsurface materials.
4. Slopes exhibiting geomorphological features indicative of past failures, such as hummocky ground and back-rotated benches on slopes.
5. Areas of seeps indicating a shallow ground water table on or adjacent to the slope face.
6. Areas of potential instability because of rapid stream incision, stream bank erosion, and undercutting by wave action...
7. The occurrence of topping, leaning, bowed, or jackstraw trees that are caused by disruption of ground surface by active movement
8. Areas with slopes containing soft or liquefiable soils.
9. Areas where gullying and surface erosion have caused dissection of the bluff edge or slope face as a result of drainage or discharge from pipes, culverts, ditches, and natural drainage courses.
10. Areas that are at risk of mass movement due to seismic events.

In addition to the prescribed 15 percent slopes with 10 feet of vertical rise the lot contains at least two of the parameters listed above to be categorized as a landslide hazard area.

The City of Bellevue outlines performance standards for proposed development in or adjacent to areas identified as a Landslide Hazard or Steep Slope.

20.25H.125 Performance standards – Landslide hazards and steep slopes.

In addition to generally applicable performance standards set forth in LUC [20.25H.055](#) and [20.25H.065](#), development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

- A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;
- B. Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;
- C. The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;
- D. The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall;
- E. Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer;
- F. Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;
- G. Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;
- H. On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;
- I. On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and
- J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC [20.25H.210](#). (Ord. [5680](#), 6-26-06, § 3)

20.25H.140 Critical areas report – Additional provisions for landslide hazards and steep slopes.

In addition to the provisions of LUC [20.25H.230](#), any proposal to modify a landslide hazard or steep slope or associated critical area buffer through a critical areas report shall comply with the requirements of this section.

- A. Limitation on Modification.

The provisions for coal mine hazard areas in LUC [20.25H.130](#) may not be modified through a critical areas report.

- B. Area Addressed in Critical Area Report.

In addition to the general requirements of LUC [20.25H.230](#), the following areas shall be addressed in a critical areas report for geologically hazardous areas:

1. **Site and Construction Plans.** The report shall include a copy of the site plans for the proposal and a topographic survey;
2. **Assessment of Geological Characteristics.** The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region;
3. **Analysis of Proposal.** The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties; and
4. **Minimum Critical Area Buffer and Building Setback.** The report shall make a recommendation for a minimum geologic hazard critical area buffer, if any, and minimum building setback, if any, from any geologic hazard based upon the geotechnical analysis. (Ord. [5717](#), 2-20-07, § 10; Ord. [5680](#), 6-26-06, § 3)

20.25H.145 Critical areas report – Approval of modification.

Modifications to geologic hazard critical areas and critical area buffers shall only be approved if the Director determines that the modification:

- A. Will not increase the threat of the geological hazard to adjacent properties over conditions that would exist if the provisions of this part were not modified;
- B. Will not adversely impact other critical areas;
- C. Is designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than would exist if the provisions of this part were not modified;
- D. Is certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington;
- E. The applicant provides a geotechnical report prepared by a qualified professional demonstrating that modification of the critical area or critical area buffer will have no adverse impacts on stability of any adjacent slopes, and will not impact stability of any existing structures. Geotechnical reporting standards shall comply with requirements developed by the Director in City of Bellevue Submittal Requirements Sheet 25, Geotechnical Report and Stability Analysis Requirements, now or as hereafter amended;
- F. Any modification complies with recommendations of the geotechnical support with respect to best management practices, construction techniques or other recommendations; and
- G. The proposed modification to the critical area or critical area buffer with any associated mitigation does not significantly impact habitat associated with species of local importance, or such habitat that could reasonably be expected to exist during the anticipated life of the development proposal if the area were regulated under this part. (Ord. [5680](#), 6-26-06, § 3)

Critical Slopes

The City of Bellevue defines Critical Slopes as those with grades of 40 percent or more with 10 feet or more vertical elevation change and 1,000 sf of surface area. Critical slopes were observed on the south

central portion of the property and on a lesser extend a small area on the north central portion meeting the City definition.

Existing Critical Slope areas meet the height and slope angle definitions but do not exhibit indicators of slope stability issues or landslide activity. No clearing or grading is proposed on or adjacent to the critical slope for the proposed development of the single family home. Any future development plans having a direct impact on the critical portion of the slope should be evaluated by a geotechnical professional with regard to maintaining stability and erosion protection.

Based on our site explorations, observations and research it is our opinion the setback and buffers from the Critical slope on the north side can be eliminated and the setback or buffer from the southern slope can be reduced or eliminated for surface improvements which will enhance stabilization of the toe of the slope.

It is our understanding no significant clearing, grading or modifications are proposed to the moderate to steep slopes. The slopes and underlying bedrock of siltstone and fine sandstone appear to be stable with no evidence of surface movement, landslide activity or surface erosion. Critical slopes as defined by the City of Bellevue are most prominent on the south central portion of the lot, south of the small drainage channel. A smaller area of Critical Slope can also be found near mid slope on the north side of the lot. Existing Residential development has occurred adjacent to both of these areas outside the property.

FINDINGS

In addition to our review of the site for any of the indicators; we reviewed aerial photography over time, topographical maps generated by the Puget Sound LiDAR consortium, and the USGS map for the presence of landslide deposits and/or features.

The residential lot contains indicators defined by the City as Landslide hazards with moderate to steep slopes. Development of the lot can be accomplished through planning and mitigation of the moderate to steep slopes. The proposed home will be situated in a portion of the lot with gentle to moderate slopes.

Subsurface soil conditions described and reported by LS&E indicate the lot can be developed for a residential structure. Soil bearing capacities are estimated to meet or exceed 1,500 psf on undisturbed, weathered bedrock. Soil bearing capacity and consistency should be confirmed at the time of excavation and prior to placement of the foundation footings.

Access, excavation and development will encounter a variety of soil conditions. Soft, wet or unsuitable soils should be removed from below driving surfaces, foundations or areas of support to retaining walls or rockeries. Development will require incorporation of ground water collection and diversion systems, engineering of foundation walls and exterior walls as retaining structures and an integrated storm water collection system for the foundation footings, crawl space, under-slab areas, rockeries, retaining walls and driveways.

A ground water seep observed emanating from the slope near the center of the lot was discovered to be the result of a broken plastic drain pipe. The water draining from the pipe traverses the slope to the

southwest into a small area identified as a Category 3 wetland. We recommend the broken plastic pipe be repaired. Control of surface water runoff adjacent to and on the moderate to steep slopes is essential in managing or preventing near surface erosion.

No uncontrolled soil fill or loose debris should be placed onto the slope above the proposed SFR development. Areas of fill should be evaluated and the fill material approved by the structural engineer or geotechnical professional prior to placement. Placement of fill soils should be monitored and tested as necessary or as required by the City of Bellevue.

RECOMMENDATIONS

Site Preparation

Preparation of the residential site should involve erosion control, temporary drainage, clearing, stripping, cutting, filling, excavations, and subgrade compaction. Recommendations outlined below are based on our site explorations and analysis to assist with the development of a single family home. Our recommendations also address the City of Bellevue Land Use Code Sections LUC 20.25H.125, LUC 20.25H.140 and LUC 20.25H.145.

Erosion Control: Before new construction begins, an appropriate erosion control system should be installed. This system should collect and filter all surface run off through either silt fencing or a series of properly placed and secured straw bales. We anticipate a system of berms and drainage ditches around construction areas will provide an adequate collection system. If silt fencing is selected as a filter, this fencing fabric should meet the requirements of WSDOT Standard Specification 9-33.2 Table 3. In addition, silt fencing should embed a minimum of 6 inches below existing grade. If straw baling is used as a filter, bales should be secured to the ground so that they will not shift under the weight of retained water. Regardless of the silt filter selected, an erosion control system requires occasional observation and maintenance. Specifically, holes in the filter and areas where the filter has shifted above ground surface should be replaced or repaired as soon as they are identified.

Temporary Drainage: We recommend intercepting and diverting any potential sources of surface or near-surface water within the construction zones before stripping begins. Because the selection of an appropriate drainage system will depend on the water quantity, season, weather conditions, construction sequence, and contractor's methods, final decisions regarding drainage systems are best made in the field at the time of construction. Based on our current understanding of the construction plans, surface and subsurface conditions, we anticipate that interceptor drains, berms, or ditches placed across the east side of the work areas will adequately intercept surface runoff and near surface water seepage.

An existing wetland area located south and southwest of the proposed building area should be protected by a soil berm and silt fencing.

Clearing and Stripping: After surface and near-surface water sources have been controlled, the construction areas should be cleared and stripped of all duff and topsoil. Also, it should be realized that if the stripping operation proceeds during wet weather, a generally greater stripping depth might be necessary to remove disturbed moisture-sensitive soils; therefore, stripping is best performed during a period of dry weather.